

Draft Record of Decision Upper Monument Creek Landscape Restoration

USDA Forest Service Pikes Peak Ranger District, Pike and San Isabel National Forests/ Cimarron and Comanche National Grasslands El Paso County, CO



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Introduction

This Record of Decision documents my decision and rationale for the selection of Alternative 2: Modified Proposed Action. Alternative 2 is the preferred alternative described in the Final Environmental Impact Statement (FEIS).

The Upper Monument Creek (UMC) project area is located on the Pikes Peak Ranger District within the Pike National Forest in Colorado. The area is a reflection of focused fire suppression efforts over the past century. Due to increased human populations and changes in the types of land management, current conditions of the UMC area differ from desired conditions in varying degrees.

The UMC project area continues to exhibit reduced health and ecological resiliency and is in need of active management to reduce fuel loads and increase the ecological resiliency of the forest landscape. Local communities remain dependent on water from these watersheds and on other natural and recreational resources to varying degrees. The purpose of this project is to move the Upper Monument Creek landscape toward a more desirable, ecologically resilient condition better able to support more natural forest structures, disturbance regimes, vegetative diversity, wildlife habitats, and proper functioning watersheds. It also aims to maintain healthy and resilient forest conditions for future generations. To help accomplish this purpose, the Pikes Peak Ranger District has identified the following needs:

- To actively manage the landscape to increase the resiliency of the forest
- To address reduced health of the forest, watersheds, wildlife habitat
- To address the high risk of catastrophic wildfires

The agency developed a no action and used iterative NEPA and adaptive management to develop and refine the proposed action, which are outlined and analyzed in FEIS.

The FEIS for this project has been prepared pursuant to the requirements of the National Environmental Policy Act (NEPA, 40 CFR 1500-1508), the National Forest Management Act and its implementing regulations, and the Pike and San Isabel National Forest Plan. The draft decision presented in this document addresses activities proposed on lands administered by the Forest Service for which Federal decisions are required.

The FEIS documents the analysis of environmental effects associated with a suite of treatments on approximately 70,600 acres of National Forest System (NFS) lands. The project will be implemented over a 10-year period or until objectives are met. The area affected by this decision includes lands generally west of Colorado Springs and East of Rampart Range Road north to the South Platte District

of Pike National Forest. All Forest lands within the UMC project area are administered by the Pike National Forest's Pikes Peak Ranger District.

This draft ROD documents issues resulting from public and stakeholders, and local collaborative efforts; in conjunction with the analysis of alternatives, including the no action alternative. It presents my decision along with rational and alternatives considered in reaching this decision.

Background

This draft decision is a result of several years of planning and collaboration among interested parties, groups and organizations, and Federal, State and local government agencies. The Upper Monument Creek Landscape Restoration Initiative (the UMC Initiative) was launched in 2012 in an effort to accelerate the pace of urgently needed forest restoration by forging collaborative agreement on science-based management recommendations for a high priority area on the United States Forest Service's (USFS) Pike National Forest. The UMC Initiative builds on the work of the Front Range Roundtable (Roundtable), which has been working together since 2004 to dramatically increase forest management that reduces wildfire risks to communities and restores resilient ecological conditions in Front Range forests. Treatment within the landscape will be implemented under the auspices of the Front Range Collaborative Forest Landscape Restoration Project (CFLRP) and Long Term Stewardship Contract, both of which are Roundtable priorities. The Roundtable is made up of several different stakeholders, divided into five different teams. The group meets quarterly and the meetings and membership are open to the public. In addition, the District supports the Air Force Academy, County, City and State Lands, and private landowners conducting fuels reduction treatments on private lands. Some landowners have and continue to implement fuels reduction work on their private lands adjoining the project boundary. As an active participant in Community Wildfire Protection Planning efforts, the District would continue to encourage and support fuels reduction treatments on private lands.

Decision

I have reviewed the project record, individual specialist reports, and the analysis presented in the FEIS for the Upper Monument Creek Landscape Restoration Project, considered internal and external comments received, and have discussed the projects anticipated effects with both the project interdisciplinary team and Pike National Forest staff. As a result I have decided to implement alternative 2, Modified Proposed Action with the following modification: a "white paper" was prepared by Upper Monument Creek Interdisciplinary Team members in February 2017 in an attempt to outline how the Forest Service intends to implement the vegetation treatments addressed in the Upper Monument Creek EIS (UMC) within an adaptive management framework. The Proposed Action of the UMC project was developed collaboratively with the Collaborative Forest Landscape Restoration Program Front Range Roundtable Landscape Restoration Team (CFLRP FRR LR Team- referred to as *the Collaborative or Collaborative group* hereafter) and the successful implementation of the project will depend on collaborative input and involvement as well.

The intent of the proposed action is to restore more resilient ecological conditions across the entire landscape and particularly Front Range forests; reduce the impacts of severe wildfires on property, infrastructure, and natural resources; and contribute towards the long-term sustainability of a full range of forest values including creating effective wildlife habitat and protecting aquatic resources. The proposed action entails the treatment of up to 31,700 acres within the 70,600-acre UMC project area (Figure 4). A combination of mechanical thinning with product removal, service work, manual thinning, pile burning, post treatment broadcast burning, and first entry prescribed fire would be utilized to achieve the desired ecological conditions. Implementation of these management actions is expected to begin in 2017, and extend over a period of 10 years or more.

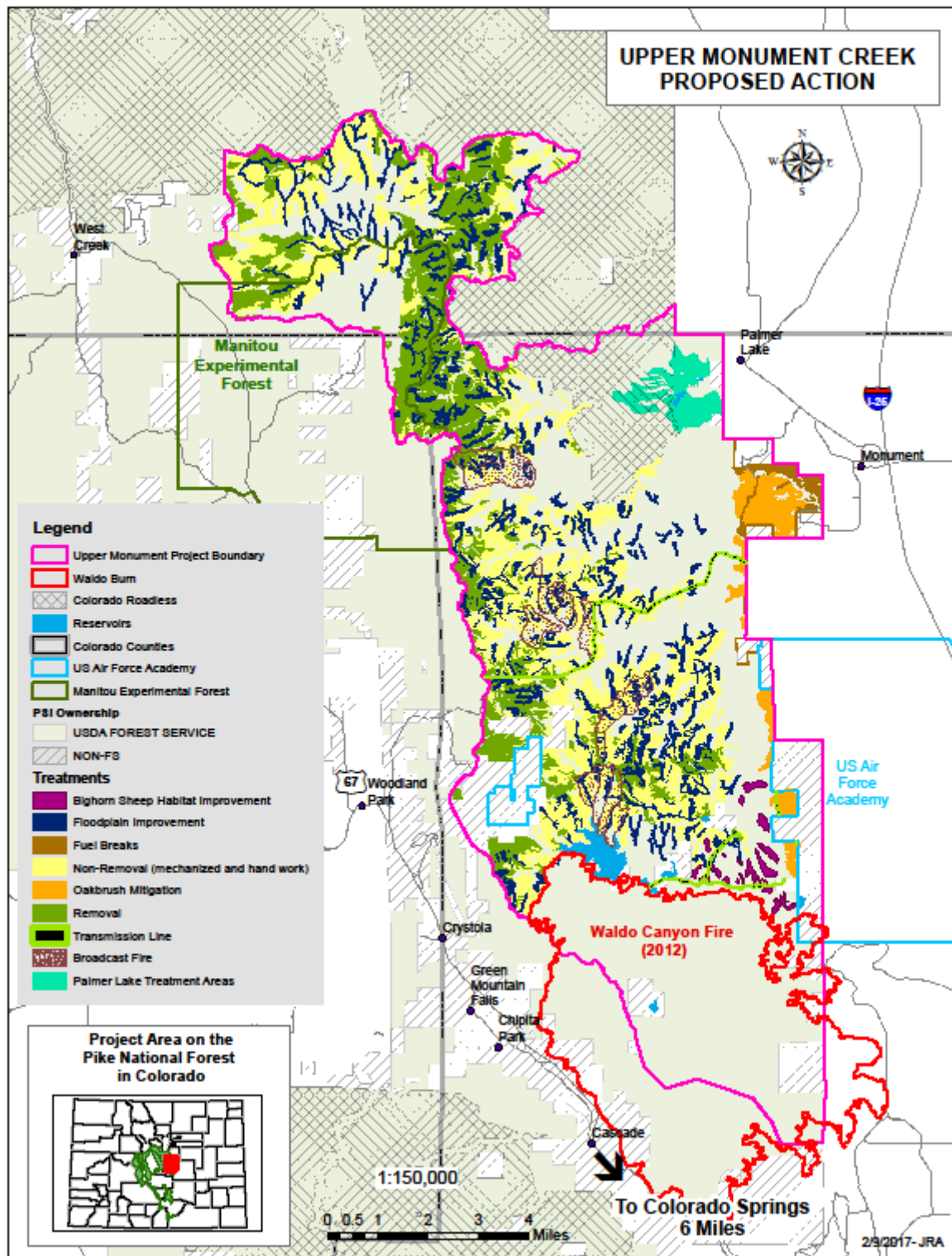


Figure 1. Map of the Proposed Action.

Vegetation Management

Vegetation management treatments would occur in a variety of forest types in order to promote the composition, structure, and function that is more characteristic of project area desired ecological conditions. The proposed treatments are intended to result in the development of large trees, small and

larger forest openings, heterogeneous structural characteristics, understory plant diversity and forage productivity, and resiliency to disturbance events.

Mechanical treatments employing ground-based logging techniques would occur on about 8,277 acres, while a combination of mechanical and manual treatments (i.e., hand treatment methods) would occur on about 13,519 acres. An estimated 1,127 acres of oakbrush and 1,153 acres of fuel break treatments would occur on the eastern side of the project area in a wildland urban interface zone adjacent to Monument, CO; Palmer Lake, CO; and the Air Force Academy. About 272 acres of transmission line corridor clearing would also be performed in order to maintain the right-of-way and protect the power lines that traverse the project area.

The majority of the proposed treatments would occur in ponderosa pine/Douglas-fir, dry mixed conifer, and mesic mixed conifer stands, especially those in a closed canopy condition (i.e., vegetation classes in ‘mid closed’ and ‘late closed’). Openings of various sizes would be created in all vegetation classes, but placement in ‘mid closed’ stands or expansion of existing openings would be favored (Figure 5). The enhancement of existing openings (i.e., expanding from pre-existing openings) would be emphasized over created openings where feasible. Other treatments in “‘mid closed’ and ‘late closed’ stands would target ladder fuels, dense understories, and the spatial arrangement in stands with a large ponderosa pine component. Vegetation management in forest types other than the three predominant forested vegetation systems, such as lodgepole pine, would generally serve to reduce fuels; increase landscape heterogeneity, assist in the progress towards uneven-aged characteristics, and open growing space for intermediate and co-dominant trees (See summary Table 6).

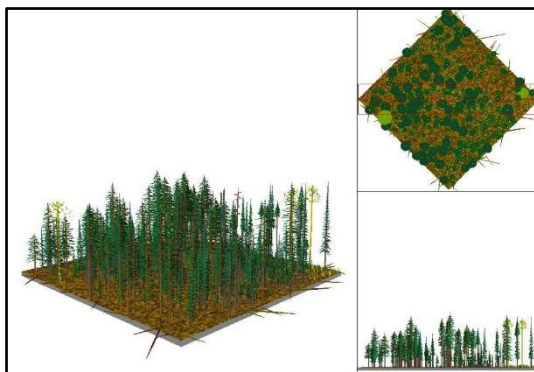
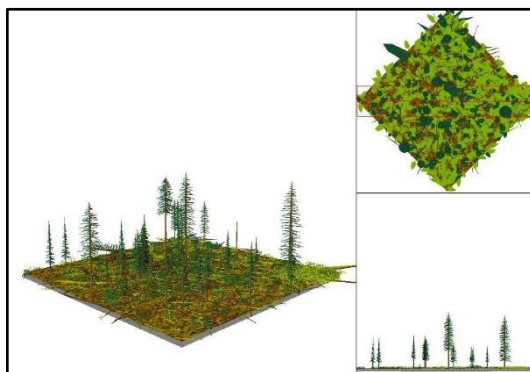
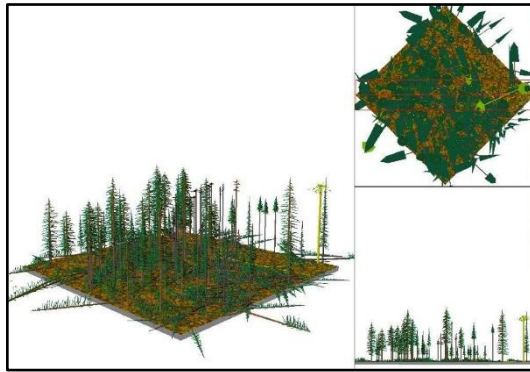
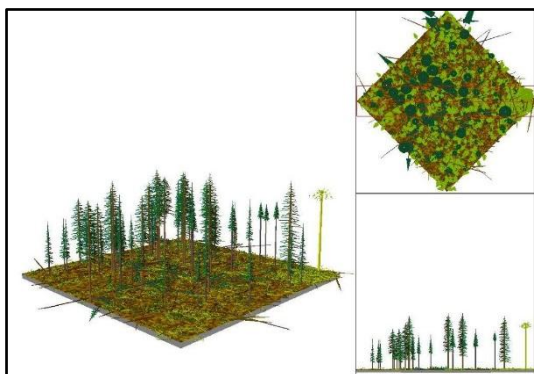


Figure 2. From top left to bottom right, graphic representation of pre-treatment, 2 acre, 15 acre, 30 acre openings.

Ponderosa Pine – Douglas-fir Forests

The ponderosa pine – Douglas-fir forested vegetation system is located primarily at lower elevations and dry sites at higher elevations.



and

Historically, these systems were shaped by low- to mixed-severity, frequent fire, which maintained an open stand structure with variably spaced individual trees, groups of trees, and openings. Current conditions are much denser than historical conditions for this system, and thus this system is a high priority for restoration.

A predominantly uneven-aged, open stand condition that contains larger openings (i.e., one acre and larger)

irregularly distributed throughout the treatment area is the desired condition for this forested vegetation system. Management in ponderosa pine – Douglas-fir woodlands would focus on reducing stand densities, and restoring spatial structure by enhancing tree groups, scattered individual trees, and openings. Ponderosa pine would be the dominant species, but Douglas-fir would be present in areas with higher moisture availability and productivity. In all cases, aspen would be retained and enhanced. Small, untreated pockets would be retained for landscape heterogeneity and wildlife cover. Old trees, snags, and coarse woody debris would be retained as well to provide wildlife benefit and structural complexity.

Management objectives within the ponderosa pine – Douglas-fir forested vegetation system:

- Residual basal area (BA) would range from 30 to 50 ft² per acre, but would be distributed according to site variability in topography and substrate characteristics such that BA in any given stand may range from 0 ft² per acre (openings) up to 80+ ft² per acre (high-density patches).
- Openings would be variable in size, shape, and distribution. Enhancing existing openings would allow for the restoration of larger openings (e.g., up to 40 acres in size), while creating new openings would enhance landscape heterogeneity and break canopy continuity. Suitable locations for openings include low-productivity areas such as shallow soils, areas currently lacking ponderosa pine, areas where disease or insect infestation are present, and plantations established from off-site seed sources. Created openings may range in size from 1 to 20 acres.
- A low-density matrix (i.e., basal area of 20 to 40 ft² per acre) would exist. Suitable locations for low-density structures include ridges, south-facing slopes, and other areas of low productivity. Residual trees would be variably spaced. Existing tree groups (i.e., trees having interlocking crowns) would be enhanced by clearing around the group. Approximately 50-70 percent of trees may occur in groups, whereas the remaining 30-50 percent may occur as scattered, individual trees at low densities. Tree groups may contain anywhere from 2 to 10+ trees, but would most likely contain around 2-4 trees. Tree groups would be separated from one another by at least 1 to 1.5 tree lengths from drip-line to drip-line (distance of limbs from tree trunk), based on the heights of trees in the group.
- A medium-density matrix (i.e., basal area of 40 to 60 ft² per acre) would occur most often at mid-slope positions and other areas of intermediate productivity, such as gentle slopes. Approximately 70-90% of trees may occur in groups that typically contain 5-10 trees.
- Areas of high density (i.e., basal area of 60 to 80+ ft² per acre) would occur on north-facing slopes and other moist, higher-productivity areas. The characteristic structure of lower-density areas (i.e., tree groups, individual scattered trees, and openings) may be less evident in these areas as most trees occur in groups (90+ percent), with few scattered individual trees.
- Untreated “reserves” representing unique ecological or cultural areas would occur within the treatment areas.
- Fuel breaks would be created in strategic locations for firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire.

Dry Mixed-Conifer Forests

Dry mixed-conifer forests often represent subtle transitions from ponderosa pine – Douglas-fir forests where moisture availability and the proportion of Douglas-fir both increase. Dry mixed-conifer forests are naturally denser and more productive than ponderosa pine – Douglas-fir forests, but have similar ecological dynamics. Low-severity fire was the dominant disturbance regime in this forest type

historically, but with some increase in the preponderance of moderate- and high-severity fire and slightly longer fire return intervals compared to ponderosa pine – Douglas-fir forests. Dry mixed-conifer forests typically have greater variability in tree group composition, from single-species to mixed-species groups, and from single-aged to multi-aged groups. There is also higher potential for ladder fuel development in this system due to the higher productivity and increased proportion of Douglas-fir.

The treatment approach in dry mixed-conifer forests is similar to that in ponderosa pine - Douglas-fir forest, though higher overall densities and a higher proportion of Douglas-fir and other conifers, such as limber pine, would be present. Greater variability in tree group composition may be present as well. Groups may contain single species or multiple species and may be single-aged or multi-aged. Old trees, snags, and coarse woody debris are important structural components that would be retained to provide wildlife benefit and structural complexity.

Management objectives within the dry mixed-conifer forested vegetation system:

- Residual basal area would range from 40 to 60 ft² per acre and would be distributed according to site variability in productivity, ranging from 0 ft² per acre (openings) up to 80+ ft² per acre (high-density patches).
- Openings would be variable in size, shape, and distribution. Sizes may range from 1 to 20 acres. Suitable locations for openings may include low-productivity areas such as shallow soils and areas where disease or insect infestation is present. Higher productivity areas may be suitable as well to mimic ‘blow-outs’ that occur with mixed-severity fire and to create opportunities for regeneration and early-seral habitat structures.
- A low-density matrix (i.e., basal area of 20 to 40 ft² per acre) would occur primarily in areas where a high ponderosa pine component (as much as 50%) is present. These areas may have been ponderosa pine – Douglas-fir woodlands prior to fire exclusion and conversion back to this woodland structure may be appropriate. Tree groups, individual scattered trees, and openings would all be present. Approximately 50-70 percent of the trees may occur in groups containing anywhere from 2 to 10+ trees, but would most often contain 2-4 trees. The remaining 30-50 percent of trees may occur as scattered individuals.
- A medium-density matrix (i.e., basal area of 40 to 60 ft² per acre) would occur with emphasis on restoring spatial structure. More trees would occur in groups (70-90%) that typically contain 5-10 trees. Mixed species groups are appropriate. Ponderosa pine, Douglas-fir, limber pine, and aspen may all occur.
- A high-density matrix (i.e., basal area of 60 to 80+ ft² per acre) would occur in higher productivity areas. Most (90 percent or more) trees may occur in groups containing a large proportion of Douglas-fir, but blue spruce may be present as well.
- Untreated “reserves” representing unique ecological or cultural areas would occur within the treatment areas.
- Fuel breaks would be created in strategic locations for firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire.

Mesic Mixed-Conifer Forests

Mesic mixed-conifer forests are found primarily in mesic or areas with cooler temperatures and higher moisture retention rates such as north-facing slopes and at higher elevations. The presence of Engelmann spruce often signals the transition from dry mixed-conifer to mesic mixed-conifer forests.

Historically, mesic mixed-conifer forests were prone to extremes in fire activity, depending on climatic conditions. Under mild conditions, they may not have burned at all, whereas during drought they may have burned with high severity. This disturbance dynamic would tend to create more of an even-aged, patch-structured system as opposed to the uneven-aged matrix characteristic of drier settings. A range of structural stages would have characterized the system across the landscape, representing varying degrees of recovery following stand-replacing fire.

Treatments in mesic mixed-conifer forests would focus on enhancing structural and age-class diversity between stands (e.g., young stands adjacent to older stands), reducing the density of older stands, and reducing fuels. In general, the mesic mixed-conifer systems are not as ecologically departed from the natural range of variability compared to the drier forest systems. However, treatments in mesic mixed-conifer that are designed for fuels reduction are desired in order to break canopy continuity and increase the potential for the use of prescribed fire within this forest type and adjacent dry forest types. Treatments would be based on the local context and the presence of values at risk. For example, a high-density patch of mesic mixed-conifer adjacent to an old-growth stand of ponderosa pine may be a candidate for treatment in order to reduce the potential for crown fire and protect the old-growth conditions.

Management objectives within the mesic mixed-conifer forested vegetation system:

- Large openings (10 to 20 acres in size) would be created in early- and mid-seral stands to mimic natural disturbances such as wind throw or blowouts that occurred historically with mixed-severity fire. Diseased or insect-infested areas may provide an opportunity for creating openings. Uniform shapes would be avoided, and the spacing and placement of openings would be located in areas that have moderate to low risk of wind throw.
- The density in late-seral, closed stands would be reduced in order to release large, old trees and accelerate development of structural complexity and old-growth features. Removal would be focused on small-diameter trees and ladder fuels.
- A high proportion of the total area in mesic-mixed conifer would remain untreated. Closed forests interspersed with open, drier forests would provide a natural and desirable landscape pattern, including habitat that is important for wildlife.
- Fuel breaks would be created in strategic locations for firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire.

Lodgepole Pine Forests

The lodgepole pine forested vegetation system is located primarily along the Rampart Range Road within the north-central part of the project area. Lodgepole pine stands consist of a diverse range of structural types, from late-seral, uneven-aged stands to younger, even-aged stands. The late-seral, uneven-aged stands within the project area appear to be a somewhat rare compositional and structural type for lodgepole pine. These stands are relatively open with patches of well-developed understory and old trees, and are dominated by lodgepole pine but also include a diverse suite of additional species such as Douglas-fir, limber pine, aspen, and occasionally ponderosa pine. Some evidence of surface fire is present throughout these stands as well. Small-scale tree mortality and regeneration processes appear to be operating in these stands, consistent with uneven-aged stand dynamics. These late-seral stands occur along flat ridges of the Rampart Range and grade downslope into younger, even-aged stands, particularly on north-facing slopes. These younger stands likely represent recovery from stand-replacing fire and are more typical of lodgepole pine, exhibiting fairly uniform stand structure and sparse understory vegetation. Stands that are regenerating from clearcutting treatments in the 1960s and 1970s are also present. These stands exhibit the classic “dog-hair” structure of young lodgepole stands.

Lodgepole pine forests within the project area do not appear to be considerably departed from historical conditions for this system type (Table 16). A suitable range of seral stages is represented at appropriate scales, and the stands currently appear healthy and have not been significantly impacted by the mountain pine beetle. However, treatments designed for fuels reduction are desired due to the location

of the lodgepole pine forests relative to other high priority ecological systems. Fuels reduction would increase the feasibility of prescribed fire in downslope ponderosa pine – Douglas-fir and dry mixed-conifer forests and thus would advance larger landscape restoration objectives. Such treatment would also serve to protect late-seral lodgepole pine stands that have been identified as unique within the landscape.

Management in lodgepole pine forests would focus on reducing fuel loads and canopy continuity, increasing structural diversity and resilience to fire and mountain pine beetle, encouraging aspen cover, and moving younger, more uniform stands in the direction of late-seral stand structures. Openings would be created to slow the rate of spread and break the direction of an active crown fire.

Management objectives within the lodgepole pine forested vegetation system:

- Precommercial thinning would be utilized in sapling-size lodgepole pine areas, but some denser thickets would remain for wildlife cover.
- Treatments would target mid-seral and closed stand structures, while treatments in late-seral, uneven-aged stands would be minimized. Wind throw would also be minimized during treatment design (e.g., thinning between openings would be avoided in mature stands).
- Patch clearcuts (3 to 20 acres in size) would be created that target mid-closed structure classes.
- Both small (<1 acre) and large (1-5 acres) openings would be created by an uneven-aged, group selection approach.
- Openings greater than 1 acre would be placed in areas considered to have moderate-to-low risk of wind throw.
- Where feasible, larger openings would be located adjacent to drainages to enhance aspen sprouting.
- Homogenous patterns, such as evenly spaced openings of the same size and even-spacing of trees, would be avoided.
- Fuel breaks would be created in strategic locations for firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire (e.g., roadways and areas located along the roadless boundary).

Gambel Oak – Mixed Montane Shrublands

Gambel oak – mixed montane shrublands occupy lower elevation, dry settings primarily along the eastern portion of the project area. This vegetation system occurs both as an oak-dominated shrubland and as more of an understory component within the ponderosa pine – Douglas-fir woodland. As one of the few deciduous tree species present within the project area, Gambel oak adds species diversity and has an important role for wildlife in terms of both cover and forage.

Gambel oak is likely over-represented on the landscape due to fire exclusion. Given a low-elevation range of occurrence, Gambel oak likely experienced frequent fire historically, which would have maintained a more open and diverse structural condition than presently exists on the landscape. A range of growth forms from large individual trees to shrubby thickets, and a rich understory community of grasses, forbs, and shrubs, were likely present historically. The area in the vicinity of the Town of Monument is currently composed of dense, uniform Gambel oak following recovery from the Berry fire of 1989. Very little structural diversity occurs and the area represents high potential for stand-replacing fire.

Management in Gambel oak – mixed montane shrublands would focus on reducing fuels, increasing structural diversity, and breaking canopy continuity where uniform canopy cover exists. Where possible, prescribed fire would be used to reduce fuel loads, increase structural heterogeneity, and enhance understory herbaceous vegetation. Priority would be given to treatments along roadsides and private land interfaces, especially where opportunity exists for complementing defensible space activities implemented by surrounding homeowners. Treatment prescriptions would also incorporate wildlife objectives where possible.

Management objectives within the Gambel oak shrubland vegetation system:

- Ponderosa pine islands and individual trees would be protected by removing Gambel oak and other woody brush that may serve as ladder fuels.
- Pine regeneration and establishment would be encouraged by removing Gambel oak in the vicinity of ponderosa pine seed trees.
- A variation in oak growth forms, sizes, age-classes, densities, and spatial distribution would exist.
- Large, old oak trees would be maintained.
- Fuel breaks would be created in strategic locations for firefighter safety, to prevent fire spread, and to create holding areas for prescribed fire (e.g., adjacent to other land ownerships, roadways, and in the ecological transition zones between forest types).

Table 1. Summary of potential treatment acres by forested vegetation system and vegetation class.

| Forested Vegetation System | Acres | Vegetation Class | | | | |
|---|-------|------------------|------------|----------|-----------|-------------|
| | | Early | Mid Closed | Mid Open | Late Open | Late Closed |
| Ponderosa Pine/Douglas-Fir Woodland | | | | | | |
| Mechanized feasible | 2,624 | 82 | 996 | 671 | 213 | 662 |
| Mechanized marginal | 2,180 | 82 | 877 | 474 | 168 | 579 |
| Dry-Mesic Montane Mixed Conifer Forest and Woodland | | | | | | |
| Mechanized feasible | 2,627 | 237 | 1,273 | 775 | 80 | 262 |
| Mechanized marginal | 2,393 | 237 | 1,521 | 398 | 72 | 165 |
| Mesic Montane Mixed Conifer Forest and Woodland | | | | | | |
| Mechanized feasible | 1,787 | 0 | 1,108 | 75 | 68 | 536 |
| Mechanized marginal | 3,273 | 2 | 2,548 | 89 | 59 | 575 |
| Lodgepole Pine Forest | | | | | | |
| Mechanized feasible | 2,213 | 17 | 802 | 255 | 362 | 777 |
| Mechanized marginal | 681 | 0 | 36 | 363 | 58 | 224 |
| Floodplain Improvement | | | | | | |
| Mechanized feasible | 0 | 0 | 0 | 0 | 0 | 0 |
| Mechanized marginal | 3,940 | 16 | 2,617 | 935 | 8 | 364 |
| Gambel Oak-Mixed Montane Shrubland | | | | | | |
| Mechanized feasible | 826 | 0 | 458 | 368 | 0 | 0 |
| Mechanized marginal | 0 | 0 | 0 | 0 | 0 | 0 |

Palmer Lake Reservoir

Additionally, treatments of approximately 1,021 acres would occur around Palmer Reservoir, and approximately 383 acres of those treatments would occur in the Rampart East Colorado Roadless Area

Table 2. Combined treatments around Palmer Reservoir.

| Cover Type | Total acres around Palmer Reservoir (including roadless) | Acres in Roadless |
|-------------------------------------|--|-------------------|
| Ponderosa Pine/Douglas-Fir Woodland | 507.5 | 230.5 |
| Dry-Mesic Mixed Conifer | 403.0 | 126.0 |
| Mesic Mixed Conifer | 56.3 | 26.1 |
| Gambel Oak-Mixed Montane Shrubland | 25.8 | 0.0 |

| | | |
|-----------------------------|--------|-------|
| WATER | 9.0 | 0.0 |
| Montane-Subalpine Grassland | 7.7 | 0.0 |
| unclassified | 7.2 | 0.8 |
| Montane Riparian Systems | 5.4 | 0.0 |
| Total | 1021.9 | 383.4 |

Floodplain Improvement

Floodplain improvement treatments would occur on approximately 3,940 acres of the analysis area. They would be applied to improve the Watershed Condition Classification and attain overall project desired conditions. Floodplain improvements include riparian and wetland vegetation enhancement, hillslope and stream restoration, and soil stability. Thinning of encroaching upland vegetation will restore meadow features, hydrologic function, and aquatic habitat conditions.

Riparian and Wetland Vegetation Enhancement

Floodplain improvements found in between draws and in valley bottoms bounded by upland forests has highly variable vegetation and can range from nearly pure even-aged aspen stands to conditions and structures that closely mimic uneven-aged mesic mixed conifer forests. Trees in these areas are typically larger than the surrounding upland site due to the alluvial soils and mesic conditions that classify these areas. These areas have better growing conditions that can support greater tree densities than more upland sites and typically have two to three distinct canopy classes.

The mesic conditions that characterize these areas do not tend to favor frequent low intensity fire. Typically, these areas are prone to high intensity and severity fires that occur infrequently. These fires tend to originate in upland sites and can carry into wetlands and riparian areas during optimum burning conditions and/or during extended drought periods when riparian areas are much drier than normal. The good growing conditions, capacity of maintaining high levels of tree density and typically infrequent fire return intervals means that conifer encroachment and fuel loadings in these areas can be relatively high under normal conditions.

Wetland and riparian areas, and corresponding vegetation, are important components of the larger watershed health as they serve as filters for upland sedimentation, buffer overland flow of water, sustain ecological diversity, and provide hydrological input into larger stream classes.

Floodplain improvements:

- Thinning of encroaching upland vegetation to restore meadow features, hydrologic function, and aquatic habitat conditions.
- Enhancing aspen component of the landscape by expanding access to available growing space or through regeneration.
- Broadcast burning and the removal of woody coniferous and decadent (i.e. decaying, non-vigorous) vegetation encroachment resulting from past fire exclusion to protect and restore watershed function.
- Willow staking and transplanting will improve channel function and enhance riparian buffers.
- Riparian/wetland vegetation planting will restore features to a properly function condition.
- Reducing hydrologic connectivity with abundant sediment sources and minimizing soil erosion and sedimentation will result in effective sediment transport and maximize riparian vegetation.
- Restoring disturbed areas include hillslope/rill/gully erosional surfaces contributing sediment to streams will maintain water quality and re-establish vegetation cover.

Riparian and Wetland Areas:

- Reduce fuels, increase structural diversity, break canopy continuity where uniform canopy cover exists, perpetuate vigorous aspen clones, and protect and enhance the large conifer component of these systems. Where possible, prescribed fire should be used to reduce fuel loads, increase structural heterogeneity, and enhance understory herbaceous vegetation.

Wildlife Habitat Improvement

Vegetation management will be employed to achieve various wildlife habitat improvement objectives throughout the Upper Monument Creek landscape. Openings of various size, shape, and arrangement would be created to provide edge habitat and improve habitat connectivity for a variety of species. Understory conditions would be improved by stimulating grass, forb, and shrub development through tree removal and prescribed fire. Habitat features for cavity nesting birds and roosting or hibernating mammals, and foraging habitat and cover for a variety of mammals, raptors, and ground-dwelling birds would be maintained and enhanced by encouraging the development of mature aspen stands through the removal of competing conifers. In areas of decadent aspen clones, regeneration methods would be employed to establish vigorous aspen stands in a variety of age classes. Large trees and trees with old growth characteristics would be retained throughout the landscape. Habitat components (e.g., snags, cavities, etc.) would also be created or enhanced in areas in which these features are deficient or desired.

Bighorn Sheep Habitat Improvement

The intent of the proposed bighorn sheep habitat improvements is to maintain and enhance occupied habitat, escape terrain, and movement corridors for the Rampart herd.. The proposed treatments areas were identified and designed through cooperation with Colorado Parks and Wildlife (CPW). CPW biologists provided site-specific expertise of bighorn sheep habitat use and movements within the project area (Stiver 2015, pers. comm). Under Alternative 2, vegetation management techniques would be employed to maintain or improve habitat conditions in West Monument Creek and Blodgett Peak, as well as enhance escape terrain and movement corridors between Queens Canyon, Stanley Canyon, and slopes in the vicinity of Eagle Rock.

- Bighorn sheep habitat improvement would entail the following management actions: Habitat improvement would occur on about 320 acres, primarily within stands of the ponderosa pine/Douglas-fir and the dry-mesic mixed conifer ecological systems.
- Treatments would occur on steep slopes (i.e., generally greater than 45 percent) with predominantly eastern to southwestern aspects.
- Based on accessibility and site conditions, a combination of thinning, pruning, and regeneration cutting would be performed with mechanical (i.e., mastication) and/or manual methods (e.g., hand treatment methods) to reduce vegetative cover.
- Broadcast burning would be employed to reduce tree or shrub encroachment, maintain open conditions, and improve forage quality and production, when and where feasible.
- The target residual basal area would range from 0 to 60 ft² per acre, but may exceed the upper range in stands with a high tree density.
- In stands where residual tree cover is retained, select for removal of tree species that are contributing to horizontal cover (e.g., Douglas-fir).
- Pruning, girdling, inoculation, or other methods would be used to create snags, where desired as an alternative to tree felling.
- Residual slash (i.e., coarse and fine woody debris) would be treated with a combination of lop and scatter, pile burn, or broadcast burn techniques.
- Treatment units would be seeded with native grasses and forbs to inhibit conifer regeneration, if necessary.
- Treatments methods would be employed in phases over time to achieve and maintain desired conditions, such as persistent openings.

Mexican Spotted Owl

The intent of these management actions is to support the recovery of the federally threatened Mexican spotted owl (MSO) by maintaining or improving habitat conditions for this species in the long-term. Vegetation management would occur primarily within modeled MSO Forested Recovery Habitat, consisting predominantly of mixed conifer and riparian forest that has the potential of becoming nest/roost habitat, or provides habitat for foraging, dispersal, or wintering.

Table 3. Summary of potential treatments within modeled Mexican spotted owl Recovery Habitat

| Recovery Habitat Type (Acres) | Proposed Management Action | | | | | | | | | Acres of Recovery Habitat (%) | |
|------------------------------------|----------------------------|-------------|--|-------------|---|-------------------------|--------------------|------------------------|--|-------------------------------|--------------------|
| | Removal | Non-removal | Riparian/ Floodplain Enhancement | Fuel Breaks | Bighorn Sheep Habitat Improvement | Oak Brush Mitigation | Prescribed Fire | Power Line Clearing | | Treated | Untreated |
| Nest/Roost (2,920) | 0 | 79 | 9 | 0 | 15 | <1 | 0 | 29 | | 133 (4) | 2,789 (96) |
| Foraging/ Non-breeding (17,847) | 1,485 | 4,219 | 670 | 30 | 10 | 31 | 206 | 44 | | 6,695 (38) | 11,152 (62) |
| Riparian (1,716) | 32 | 27 | 709 | 0 | 5 | 0 | 43 | 0 | | 816 (48) | 900 (52) |
| Total Acres (% of 22,483) | 1,517 (7) | 4,325 (19) | 1,388 (6) | 30 (<1) | 30 (<1) | 32 (<1) | 249 (1) | 73 (1) | | 7,644 (34) | 14,841 (66) |

- All vegetation management treatments in MSO habitat that are identified and permitted by the Mexican Spotted Owl Recovery Plan, First Revision, may occur throughout the UMC landscape (e.g., prescribed fire, thinning, or other silviculture treatments).
- Habitat improvement treatments would occur on about 7,500 acres of MSO Recovery Habitat, primarily within stands of the dry-mesic mixed conifer, mesic mixed conifer, and montane riparian ecological systems.
- Vegetation management would reduce the density in late-seral, closed stands, thereby releasing large, old trees and accelerating the development of structural complexity and old-growth features.
- Small-diameter trees and ladder fuels would be reduced in stands targeted for protection against stand-replacing fire.
- Prescribed fire, thinning, and other silvicultural treatments would be employed to limit the spread of insects and disease when considered to be a threat to the habitat of MSO or prey.

Management objectives within forested recovery habitat:

- In stands designated for the development of desired nest/roost conditions, vegetation management treatments would be designed to achieve species diversity and spatial heterogeneity, and promote the development and growth of large trees, while retaining or creating large snags and downed woody debris.

Management objectives within riparian recovery habitat:

- Vegetation management treatments would restore or enhance Proper Functioning Condition (PFC), to attain the highest ecological status and potential natural community structure (i.e., mid- to late-seral conditions) possible within the capability and potential of the site.
- Treatments would provide for a diversity of species, age, and size classes of native riparian trees and shrubs, as well as a diversity of understory herbaceous species.

Management objectives within other forest and woodland types:

- Vegetation management treatments would maintain or improve 6,695 acres of habitat for foraging, dispersing, and wintering spotted owls by emphasizing sustainable and resilient forest conditions.

Management objectives within other riparian forests types:

- Vegetation management treatments would maintain or improve 709 acres of habitat for dispersing and wintering spotted owls by emphasizing proper functioning ecological condition and the retention of structural and floristic characteristics that typify riparian systems in PFC.

Snags, Partially Dead Trees, and Coarse Woody Debris

The intent of these management actions is to ensure that features that have the potential to be utilized by wildlife for foraging, roosting, nesting, denning, cover, and hibernacula are available throughout the UMC landscape.

- Individual and groups of snags of a variety of species, and sizes and decay classes, would be retained and created on all aspects and slope positions, or where determined to be deficient or desired throughout the UMC landscape.
- Snag recruitment would be encouraged through deliberate tree manipulation. A variety of methods would be utilized for the creation of snags or partially dead trees, including, but not limited to: girdling, inoculation, pheromones, drilling, prescribed fire, manual and mechanical manipulation (e.g., topping, limbing, etc.), and use of explosives.
- Snags created by natural processes (e.g., insects and disease) would be preferred for retention as potential nest cavity trees.
- Coarse woody debris of various size and decomposition classes would be retained or created where determined to be deficient or desired throughout the UMC landscape.
- Snags and coarse woody debris would be reduced or removed from locations in which a reduction in fire hazards is the management emphasis (e.g., fuel breaks, infrastructure, etc.).
- Snags and coarse woody debris would be reduced or removed from stands in which opening enhancement or creation is desired, including sites impacted by insect and disease outbreaks.

Aspen Restoration and Enhancement

The intent of these management actions is to maintain, enhance, and expand Quaking aspen stands for primary and secondary cavity nesting birds and canopy nesting birds, as well as for foraging and cover for a variety of mammals, raptors, and ground-dwelling birds. Vegetation management would occur in aspen stands that are decadent, or in which recruitment is deficient or competition is occurring due to conifer encroachment.

- Individual aspen trees and aspen stands would be retained and enhanced using vegetation management treatments and techniques that are most ecologically appropriate to each unique stand. Choosing the appropriate technique for a given aspen stand depends on its age, vigor, stocking, associated vegetation, accessibility, and the abundance of other aspen on the landscape (Shepperd 2001). Successful vegetative regeneration of aspen is dependent upon three key components: hormonal stimulation (disturbance event), the growing environment

(full sunlight, warmer temperatures) and protection of new suckers (ungulate browse, vegetation competition) (Shepperd 2001).

- In coniferous stands in which there is an aspen component, prescriptions would be designed to promote aspen cover.
- Existing aspen patches would be “day-lighted”, in which vegetation around them will be cleared to increase vigor and abundance.
- Aspen stand vigor would be protected and enhanced by removing conifer encroachment.
 - Aspen stands would be restored by removing competing vegetation, allowing more sunlight to reach the understory and providing the aspen more growing space in the root system.
 - Competing conifers would be removed by selective cutting or girdling. Tree girdling is an effective tool to create wildlife habitat.
 - Habitat features would be maintained and enhanced by encouraging the development of mature aspen stands.
 - An increase in the spatial heterogeneity of aspen will limit the suitable habitat and dispersal potential of Douglas fir tussock moth populations.
- Aspen restoration would be encouraged in aspen stands that are decadent or in which recruitment is deficient to encourage the development of a new vigorous cohort.
 - Regeneration methods (e.g., clearcut) would be employed to promote the propagation of new suckers and establish vigorous aspen stands in a variety of age classes. Mechanical removal of overstory stems is known to produce aspen suckers and does not damage the parent root system (Shepperd 2001).
 - Prescribed fire would be employed to remove encroaching conifers and to promote aspen suckering. Fire meets all the requirements for aspen regeneration. It stimulates suckering by killing overstory stems allowing new stems to emerge, removes competing understory vegetation, and it allows sunlight to reach the forest floor. The vegetation consumed by the fire injects nutrients for new suckers and the blackened surface warms soil in the root zone, further stimulating sucker growth (Shepperd 2001).
 - Aspen stands would be manipulated to stimulate new growth. Potential methods include selective cutting, girdling, pushing over mature aspen stems with a dozer, severing aspen roots of parent stems, and ripping the perimeter of a decadent aspen clone, etc.
- Seeding, and the planting of seedlings and/or stem or root cuttings may occur where aspen is desired but not present to reestablish aspen in an area where it has been lost.
- Where feasible, larger openings would be located adjacent to drainages to enhance aspen sprouting (e.g., within the lodgepole pine forest ecological system).
- Residual trees or slash would be retained or removed from treated aspen stands depending on objectives or site conditions. Slash can act as a barrier to herbivory and browse of new, delicate suckers.
- Barriers would be employed to protect aspen regeneration from herbivory, when necessary.
- Fencing would be constructed to prevent the browsing of aspen suckers by ungulates. Deer and elk foraging in these stands cause significant browsing injuries to aspen suckers and small saplings. Intense, chronic browsing on aspen suckers by wildlife has also suppressed or eliminated regeneration in aspen stands thereby reducing aspen ecosystem resilience (Seager et al 2013).

- Barriers of felled trees or hinge trees would be arranged as to impede ungulate access (e.g., jackstraw method).

Opening Creation and Enhancement

The intent of these management actions is to create and enhance forest openings that provide edge habitat and improve habitat connectivity for a variety of species. Vegetation management would be employed to create conditions in which openings in the forest canopy are more prevalent.

- Openings of variable size, shape, and arrangement would be created or enhanced where determined to be deficient or desired throughout the UMC landscape.
 - Openings would be created in all vegetation classes, but placement in ‘mid closed’ stands would be favored.
 - The enhancement of existing openings (i.e., expansion of pre-existing openings) would be emphasized over created openings where feasible.
- Persistent openings would be created when compatible with resource objectives, and where permitted by the Forest Plan (e.g., Management Areas 4B and 5B).
 - Vegetation management would be employed in phases over time to achieve and maintain persistent openings.
 - Large persistent openings, up to 40 acres in size, would be created and maintained in all management areas, with the exception of 7A and 7D,
 - In management areas in which large persistent openings are not permitted by the Forest Plan, aspen may be enhanced if present.
- Smaller and less persistent canopy openings would be created at a stand level.
- Habitat features would be retained within openings where determined to be deficient or desired throughout the UMC landscape.
 - Groups of live trees or snags may be retained in large created openings for nesting and foraging birds. High tree stumps or short snags would be retained where desired for woodpecker foraging.
 - Slash piles, piles of logs, stumps, or other debris may be created within openings to maintain habitat connectivity, and provide shelter, foraging, and denning habitat for small mammals.
 - Aspen trees would be retained and regeneration would be encouraged when present.

Prescribed Burning

Prescribed fire as considered in this analysis focuses on the use of pile burning and under burning to help remove or modify fuels within stands or broader vegetation types. Prescribed burning of existing natural fuels is targeted on up to 2,285 acres with a focus on reducing fuel loads, increasing understory productivity and diversity, allowing fire to perform its natural ecological role. In these cases, use of prescribed fire may be used as the primary treatment tool for achieving those objectives on those stands that are currently in fuel models 2, 9, and 10 that can be safely burned with low intensity fire without much need for significant mechanical manipulation of the existing overstory or fuel components.

A larger percentage of acres is also targeted for the use of pile burning and prescribed fire as secondary or final treatments in association with stands or cover types where other silvicultural treatments will first be required to meet the objectives of reducing the density and distribution of the overlying forest cover. In these instances, fire will be used to both remove concentration of slash and other fuels, as well as to further thin the remaining forest to help create forest conditions more typical of historical wildfire, insects, and disease patterns.

Management objectives for prescribed burning:

Pile Burning Objectives

- Burn slash piles to remove woody fuels in a safe and economical manner.
- Limit scorch damage to residual trees.
- Minimize and manage smoke generation and maximize pile burning to help address wildfire control hazards.
- Minimize soil damage by controlling amounts of heavy fuels included in piles and by igniting under proper weather conditions.
- Consume a minimum of 75% of fuels less than 5 inches in diameter and 50% of fuels larger than 5 inches in diameter within piles.
- Consume at least 95% of dozer or hand piles, and 100% of the landing piles.

Broadcast Burning Objectives

- Reduce 1, 10, 100 hr. dead fuel loading by 50-75% within burn units.
- Introduce fire on at least 50% of burn unit acres.
- Design burn plans to reduce conifer regeneration and raise crown heights of conifers greater than 8" DBH.
- Limit mortality of residual conifers over 12" DBH to a maximum of 15%.

First Entry Broadcast Burn Objectives

- Reduce 1, 10, 100 hr. dead fuel loading by 50-75% in burn units.
- Introduce fire on a minimum of 70% of identified acres.
- Reduce conifer regeneration and raise crown heights for conifers greater than 8" DBH.
- Limit conifer mortality to a maximum of 35%.

Table of Treatments Under the Proposed Action

The table below describes the proposed treatments by forest cover, description, management goals, desired outcomes, associated polygons on the proposed action map, acres, and treatment actions. The forest and collaborative group intend to use an adaptive management approach during implementation of this project, but in a very specific manner. It would be difficult (in fact, impossible) to describe the exact location, timing, combination of treatment actions, and specific amounts of each treatment type over a period of years that would best move us toward the desired conditions. Rather than guess at specific amounts, timings and mixes of treatments (which as stated above would almost certainly be wrong) the forest proposes to display the areas where these intensive silvicultural treatments would be applied, describe the multiple treatment actions which are appropriate to use, describe the circumstances under which each of the treatments would be or would not be appropriate, acknowledge that the treatments would be applied within approximately the next ten-fifteen years, but defer selection of the specific treatment actions until resources are available for implementation. The specialists analyzed effects to resources by analyzing the areas where the actions might occur (see polygons on the proposed action map), as though they will occur. By doing so, the agencies are prepared for whatever action is needed in the areas identified for treatment.

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|-------------------------------------|---|--|---|--|---------|---|
| Ponderosa Pine/Douglas Fir Woodland | <p>The ponderosa pine–Douglas-fir forested vegetation system is primarily at lower elevations and dry sites at higher elevations.</p> <p>Historically, these systems were shaped by low- to mixed-severity, frequent fire, which maintained an open stand structure with variably spaced individual trees, groups of trees, and openings.</p> | <p>Focus on reducing stand densities and restoring spatial structure via enhancement of tree groups, scattered individual trees, and openings.</p> <p>Promote predominantly uneven-aged, open stand conditions that contains lesser amounts of even-aged trees and having larger openings (one acre and larger) irregularly distributed throughout the treatment area.</p> | <p>Basal areas ranging from 30 to 50 ft² per acre, Variable BA within stands ranging from 0 ft² per acre (openings) up to 80+ ft² per acre (high-density patches).</p> <p>Low-density matrix (20 to 40 ft² per acre BA)</p> <p>Medium-density matrix (40 to 60 ft² per acre BA)</p> <p>High density (60 to 80+ ft² per acre BA)</p> <p>Untreated “reserves”</p> <p>Openings (1-20 ac) should be variable in size, shape, and distribution.</p> <p>Install fuelbreaks in tactical locations for firefighter safety, prevent crown fire spread, and to create holding areas for prescribed fire.</p> | Removal Mechanical feasible-slopes from 0-30% | 2180.69 | Tree cutting Tree Removal Mechanical logging Whole tree skidding Mastication Lop and scatter Prescribed Burning Pile burning |
| | | | | Non-Removal Mechanical marginal –slopes 30-40% use of mechanical equipment unlikely but possible given isolated breaks in slope | 5625.99 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burn |
| | | | | Fuel Breaks | 361.98 | Tree cutting Chainsaw use Tracked masticator Tracked mowing Lop and scatter Pile burning Prescribe burning |

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|-------------------|---|--|---|--|---------|---|
| | | | | Oak Brush Mitigation | 84.03 | Tree cutting Chainsaw use Tracked masticator Tracked mowing Lop and scatter Pile burning Prescribed burning |
| Dry Mixed Conifer | <p>Dry mixed-conifer forests represent transitions from ponderosa pine – Douglas-fir forests.</p> <p>Dry mixed-conifer forests are naturally denser and more productive than ponderosa pine – Douglas-fir forests.</p> <p>Low-severity fire was the dominant disturbance, but some increase in the preponderance of moderate- and high-severity fire having slightly longer fire return intervals</p> <p>Greater variability in tree group composition, from single-species to mixed-species groups, and from single-aged to multi-aged groups.</p> | <p>Management goals for the dry mixed-conifer forested vegetation system are similar to those for ponderosa pine – Douglas-fir woodlands.</p> <p>Higher overall tree densities and a higher proportion of Douglas-fir and other conifers such as limber pine should be allowed</p> | <p>Residual basal area ranging from 40 to 60 ft2 per acre distributed according to site variability.</p> <p>Ranging from 0 ft2 per acre (openings) up to 80+ ft2 per acre (high-density patches).</p> <p>Openings variable in size, shape, and distribution.</p> <p>Sizes may range from 1 to 20 acres.</p> <p>Low-density matrix (20 to 40 ft2 per acre BA); Pine Present</p> <p>Medium-density matrix (40 to 60 ft2 per acre BA)</p> <p>High-density matrix (60 to 80+ ft2 per acre BA); Blue spruce present.</p> <p>Untreated “reserves”</p> <p>Install fuelbreaks in tactical locations for</p> | Removal Mechanical feasible-slopes from 0-30% | 2073.2 | Tree cutting Tree Removal Mechanical logging Whole tree skidding Lop and scatter Mastication Prescribed Burning Pile burning |
| | | | | Non-Removal Mechanical marginal –slopes 30-40% use of mechanical equipment unlikely but possible given isolated breaks in slope | 3733.67 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burn |
| | | | | Fuel Breaks | 240.15 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning |
| | | | | | | |

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|---------------------|---|---|---|---|---------|---|
| | | | firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire. | | | Prescribed Burning |
| | | | | Oak Brush Mitigation | 316.37 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burn |
| | | | | Bighorn Sheep Habitat Improvement | 320.06 | Tree cutting Chainsaw use Lop and scatter Pile burning Prescribed Burn |
| Mesic Mixed Conifer | <p>Mesic mixed-conifer forests found in north-facing slopes and at higher elevations.</p> <p>Transition from dry mixed-conifer to mesic mixed-conifer forests.</p> <p>Prone to extremes in fire activity, under mild conditions may not have burned, but during drought may burn with high severity.</p> <p>More of an even-aged, patch structured system</p> | <p>Enhancing structural and age-class diversity between stands (e.g. young stands adjacent to older stands)</p> <p>Reduce density of older stands, and fuel loading.</p> <p>Decisions to treat based on the local context and presence of values at risk.</p> | <p>Create openings (10 to 20 acres in size) in early- and mid-seral stands to mimic natural disturbances</p> <p>Reduce density in late-seral, closed stands to release large, old trees and accelerate development of structural complexity and old-growth features.</p> <p>Removal of small-diameter trees and ladder fuels.</p> <p>High proportion of total area in mesic-mixed conifer untreated.</p> <p>Install fuelbreaks in tactical locations for firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire.</p> | Removal Mechanical feasible-slopes from 0-30% | 1787.25 | Tree cutting Tree Removal Mechanical logging Whole tree skidding Mastication Lop and scatter Prescribed Burning Pile burning |
| | | | | Non-Removal Mechanical marginal –slopes 30-40% use of mechanical equipment unlikely but possible given isolated breaks in slope | 3309.42 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burning |

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|------------------------|---|--|---|---|------------------------------|---|
| Lodgepole Pine Forests | <p>Stands consist of a diverse range of structural types from late-seral, uneven-aged stands to younger, even-aged stands within the north-central part of the project area.</p> <p>The late-seral, uneven-aged stands appear to be a rare compositional and structural type. Lodgepole pineforests do not appear to be departed from historical conditions and have not been significantly impacted by the mountain pine beetle.</p> | <p>Ecological restoration not a high priority for lodgepole pine.</p> <p>Focus on fuels reduction in support of prescribed fire in downslope cover types.</p> <p>Protect the late-seral lodgepole pine stands identified as unique on the landscape.</p> <p>Overall, the goal of these treatments would be to reduce fuel loads and canopy continuity, increase structural diversity and resilience to fire and mountain pine beetle, encourage aspen cover, and move younger, more uniform stands in the direction of late-seral stand structures</p> | <p>Minimize treatments in late-seral, uneven-aged stands.</p> <p>Target mid-seral and closed stand structures.</p> <p>Install patch clearcuts ranging from 3-20 acres targeting mid-closed structure classes.</p> <p>Create both small (<1 acre) and large (1-5 acres) openings via an uneven-aged, group selection approach in other stands.</p> <p>Locate larger openings adjacent to drainages to enhance aspen sprouting.</p> <p>Install fuelbreaks in tactical locations for firefighter safety, to prevent crown fire spread, and to create holding areas for prescribed fire. Targeting areas along roadways and areas along the Roadless boundary.</p> | <p>Removal Mechanical feasible-slopes from 0-30%</p> <p>Non-Removal Mechanical marginal –slopes 30-40% use of mechanical equipment unlikely but possible given isolated breaks in slope</p> | <p>2214.53</p> <p>682.54</p> | <p>Tree cutting Tree Removal Mechanical logging Whole tree skidding Lop and scatter Mastication Prescribed Burning Pile burning</p> <p>Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burning</p> |

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|-------------------------------------|--|---|--|--------------------------|---------|---|
| Gambel Oak-Mixed montane shrublands | Mixed montane shrublands occupy lower elevations primarily along the eastern portion of the project area. Occurs both as an oak-dominated shrubland and as an understory component within the ponderosa pine – Douglas-fir woodlands. | Reduce fuel loading, increase structural diversity, and break canopy continuity where uniform canopies exist. Where practical prescribed fire can be used to reduce fuel loads, increase structural heterogeneity, and promote understory herbaceous vegetation. | Protect ponderosa pine islands and individual trees by removing Gambel oak and other woody brush that may serve as ladder fuels. Encourage regeneration and establishment of ponderosa pine. Install fuel breaks along land ownership changes, roadways, and ecological transition zones between forest types. | Fuelbreaks | 101.89 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burn |
| Gambel Oak | Provides species diversity and has an important role for wildlife as both cover and forage. | | Manage for variation in oak growth forms, sizes, age-classes, densities, and spatial distribution. Maintain large, old oak trees. | Oak Brush Mitigation | 726.2 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burn |
| Riparian Corridors | Riparian swales are distributed throughout the project area typically in valley bottoms bounded by upland forests and cover types. The vegetation is highly variable ranging from mixed aspen stands at higher elevations to willow/shrub communities at mid elevations, and mesic | Promote hydrologic function. Modify fuel loading and types Promote riparian vegetation types Improve soil stabilization within the water influence zone Manage to protect against | Remove/alter conifer encroachment Reduce/alter ladder fuels Regenerate and expand aspen and willow cover types Improve riparian, floodplain, and hydrologic function. Reduce Bare Ground | Floodplain Improvement | 3940.83 | Tree cutting Tree pruning Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burning Willow planting Soil and streambank stabilization Install erosion/control |

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|-----------------|---|--|--|---------------------------------------|---------|---|
| | graminoid/forb types at lower elevations. | high surface flow impacts Manage to reduce post fire negative effects | Decrease Soil Erosion | | | structures Rip and seed |
| Variable | Existing powerline corridors and communications have been in place for several decades and are showing signs of advanced forest regeneration and growth | Reduce fuel type, loading, and arrangement within transmission line corridors or adjoining communication sites. | Reduce the density, height, and concentration of forested cover types within transmission line corridors or adjoining communication sites. | Transmission Line/Communication Sites | 271.59 | Chainsaw Use Cut trees Remove hazard trees Tracked Mastication Construct piles |
| Variable | Stands selected for 1 st entry burning are characteristically in more open vegetative conditions varying from upland grass types intermingled with upland shrub types having varying densities of overstory conifer types. | Reduce 1, 10, 100 hr. fuels Regenerate grass and shrub vegetation types Thin conifer regeneration Thin and raise canopy of mature conifer component | Reduce levels of conifer encroachment Create more open stand conditions Reduce fuel loading and composition helping to reduce the severity of future wildfires Enhance watershed conditions by increasing groundcover | Broadcast Fire | 2284.59 | Chainsaw Use Cut or Limb trees Lop and scatter Construct piles Hand Line Mechanical Line Skid/masticate Broadcast burning Pile and burn |
| Variable | Stands include both oakbrush and mature conifer types | Reduce the density of ladder fuels in the understory Reduce the density and arrangement of oakbrush and upland shrub types | Reduce the level and composition of understory vegetation and fuel loading to expand firefighting options in the future | Fuel Breaks/Unknown Cover | 449.74 | Tree cutting Chainsaw use Tracked masticators Tracked chippers Lop and scatter Pile burning Prescribed Burn |
| Linear Features | The Project area has several miles of existing system road and trails that will need to be used to | Where the existing transportation system is to be utilized to complete projects, maintenance activities will | Properly functioning and draining roads and trails. Use temporary roads as | Transportation System | Unknown | Mechanized equipment Road/trail maintenance Clean/replace culverts Harden surfaces |

| Forest Cover | Description/Historical Conditions | Management Goals | Desired Outcomes | Proposed Action Polygons | Acres | Treatment Actions |
|-----------------------|---|--|---|--|--------|---|
| | achieve the goals identified in the purpose and need. | be necessary to improve both the safety and operational condition of these features and any associated infrastructure. | appropriate and obliterate, rehabilitate and restore in a timely manner to discourage public use. | | | Restore/install drainage features |
| Palmer Lake Watershed | Vegetation types include riparian vegetation, mesic mixed conifer, dry-mesic mixed conifer, and ponderosa pine/douglas fir woodland types | Promote hydrologic function Reduce ladder fuels, fuel loading, fuel density, fuel composition and arrangement in forested cover types around and upstream from water reservoirs. Enhance and expand riparian vegetation types to help reduce negative post fire effects. | Remove/alter conifer encroachment from meadows and riparian corridors. Reduce/alter ladder fuels from conifer forest types Regenerate and expand aspen and willow cover types Improve riparian, floodplain, and hydrologic function. | East Rampart Roadless Area | 383.4 | Tree cutting Chainsaw use Lop and scatter Pile Burning |
| | | | | Total Acres treated around the reservoir (including CRA) | 1021.9 | |

Table 4. Adaptive management treatment actions for each of the cover types.

Design Criteria

Common to all ecological systems:

- Retain old trees of all species to the extent possible. Use morphological characteristics such as flattened crown form, furrowed and thick platy bark, deep bark fissures, and large diameter branches as distinguishing features to identify old trees. At times old trees may need to be removed for operational purposes (landing creation) but all attempts should be made to avoid these situations and cutting of old trees should be the exception rather than the rule.
- Retain snags and downed wood to the extent possible to provide structural complexity and important wildlife value. Snags should only be felled to ensure operator safety during operations.
- Preferentially retain ponderosa pine over other conifer species.
- Emphasize and expand the presence of aspen across the treatment area. Consider “day-lighting” existing aspen patches by clearing around them to increase vigor and abundance. Where aspen is present regeneration harvests may be used to encourage aspen proliferation.
- Minimize soil disturbance by utilizing low-impact silvicultural practices. Ensure that all skid trails and landings are rehabilitated (i.e. ripped and seeded with native grasses) after operations have been completed.
- Utilize implementation methods that will help facilitate the use of fire, both prescribed and natural ignitions, at the earliest time possible after treatment.
- Monitor treatment areas for the presence of noxious weeds and take measures to eradicate and/or prevent their spread should they become established.
- Tree cutting operations will be done in a manner that minimizes damage and protects residual tree stands.

Wildlife Habitat

Tree Retention

- Standing dead or live trees containing cavities will not be disturbed or felled, with the exception of the following provision: Trees containing cavities may be felled if the tree is a fire or safety hazard, and the cavity is not an active nest, roost, or den site, as approved by, and with guidance from, a Forest Service biologist.
- Select for the retention of live trees containing desirable characteristics for wildlife when available and compatible with resource objectives.
 - Desirable trees for wildlife exhibit the following characteristics: large diameter; partially dead; internal decay; sloughing or loose bark; spike-tops; broken tops or limbs; split tops; abnormal “wolfy” crowns; lightning or fire scarred; excavated cavities; squirrel foraging and middens; woodpecker foraging (e.g., sapsucker patterning); roosting activity (e.g., white-wash or droppings, owl pellets); and sign of insect or disease infestation (e.g., Witches broom caused by dwarf mistletoe, defoliation, conks, pitch tubes, etc.).

- Retain or create individual and groups of snags of a variety of species, and size and decay classes, on all aspects and slope positions, or where determined to be deficient or desired.
- Retain snags in all stands, with the exception of areas in which a reduction in fire hazards and the enhancement or creation of openings are the management objectives.
- Maintain a minimum of 20-30 snags (of varying size classes and stages of decay) per 10 acres of each treatment area (USDA 1984, p. III-12 and 13).
 - Retain all soft snags (class 3, 4, and 5) with the exception of those that are safety hazards.
 - In ponderosa pine, Douglas-fir, and aspen stands, provide hard snags (where feasible) of 12 inches diameter at breast height (dbh) or larger to a density of at least 5 per 10 acres; 10 inches dbh or larger to a density of at least 9 per 10 acres; and 6 inches dbh or larger to a density of at least 6 per 10 acres.
 - In spruce-fir and lodgepole pine stands, provide hard snags (where feasible) of 12 inches dbh or larger to a density of at least 2 per 10 acres; 10 inches dbh or larger to a density of at least 12 per 10 acres; and 6 inches dbh or larger to a density of at least 6 per 10 acres.

Course Woody Debris

- Retain an average length per acre of down-dead logs (where feasible) of the following minimum diameters (USDA 1984, p. III- 13):
 - In ponderosa pine, Douglas-fir, and spruce fir stands, retain 50 linear feet per acre of downed logs of at least 12 inches in diameter.
 - In aspen and lodgepole pine stands, retain 33 linear feet per acre of downed logs of at least 10 inches in diameter.
- Retain slash or brush piles where desired and compatible with resource objectives.
 - Favor hand piling methods in order to minimize compaction within piles and to diminish forest floor and herbaceous layer displacement and destruction.

Riparian Areas

- Prohibit vegetation management in riparian areas for purposes other than restoration or enhancement.
 - Prohibit the ignition of prescribed fires in non-forested riparian (e.g., stands composed of grass and shrub), but allow backing fires into these areas.
 - Utilize manual and mechanical vegetation management, and prescribed fire treatments, to encourage aspen regeneration and develop desired stand conditions.
- Prevent the introduction or spread of aquatic nuisance species. Clean, disinfect, and rinse all equipment (e.g., personal protective equipment, heavy equipment, waders, hand tools, etc.) prior to contact with water.

Wildlife Disturbance

- Mammals actively nesting, denning, roosting, or hibernating within trees, downed logs, burrows, or any other features will not be disturbed, to the extent practicable.
 - Any roosting bats discovered during implementation will not be disturbed. Incidents and roost sites will be reported to a Forest Service biologist.
- When encountered, birds with active ground nests, and mammals with offspring will not be disturbed or harassed.

Rocky Mountain Bighorn Sheep

- Exclude all management actions within known Rocky Mountain bighorn sheep lambing sites during the period of April 15th through June 30th, at a minimum.
- Implementation of the proposed bighorn sheep habitat improvements will be conducted in coordination with Colorado Parks and Wildlife specialists in order to identify and minimize undesirable impacts to this species.

Birds of Conservation Concern

- If a nest site is discovered or suspected, a Forest Service biologist will be informed; appropriate protection measures will be implemented as determined by a Forest Service biologist.
- Features containing bird nests (e.g., trees and shrubs) will not be intentionally disturbed or removed, with the exception of the following provision: features containing nests may be removed if the feature is not active, and is not a type that is reused, as approved by, and with guidance from, a Forest Service biologist.
- When feasible, defer mechanical vegetation management and prescribed burning from April 1st to July 15th in order to avoid disturbance to breeding birds.
 - For mechanical treatments conducted during this period, report any inadvertent removal of trees containing bird nests to a Forest Service biologist.

Raptors/Birds of Prey (eagles, falcons, hawks, owls, etc.)

- Surveys for select breeding raptors will be conducted in the proposed management areas prior to implementation.
- If a raptor nest site is discovered or suspected due to agitated behavior of a raptor, the feature or incident will be reported to a Forest Service biologist; appropriate protection measures will be implemented as determined by a Forest Service biologist.
- Spatial and temporal restrictions will be established for active and inactive nest sites. Any treatment within these restricted areas will be designed based on the species of interest, and in coordination and agreement with a Forest Service biologist. Operating restrictions may be adapted from guidelines outlined in the most recent version of the Colorado Division of Wildlife recommended nest buffer zones and seasonal restrictions for raptors.
- If a raptor nest site occurs in a prescribed fire management unit, or is discovered during the implementation of prescribed fire, management actions will be taken as necessary to protect the nest tree. Examples include:

- Minimize human presence at active nest sites to only those actions necessary to protect the nest tree from prescribed fire treatments.
- Remove excess fuels from the base of the nest tree and any adjacent trees that may pose a hazard to the nest.
- Employ ignition methods that minimize smoke, fire intensity, and/or fire duration within active nest sites. Ensure smoke from the burn does not disturb the nest while the adults are incubating eggs, or while young are confined to the nest tree.
- Exclude fire from the nest site when management actions are unable to effectively mitigate adverse effects to individual raptors or the nest tree.
- Monitor raptor sites to determine effectiveness of nest protection measures. Adjust the size of nest protection zones and management actions permitted within these zones as necessary to ensure reproductive success.

Management Indicator Species

Abert's Squirrel

- In ponderosa pine stands, protect or provide for one Abert's squirrel nest tree clump per six acres (USDA 2005, p.83)
 - Where feasible, protect or provide for 0.1 acre of 9 to 22 inches dbh ponderosa pine with an interlocking canopy and a basal area of 180 to 220.

Rocky Mountain Elk

- Protect elk calving concentration areas from habitat modification and disturbance from May 15 - June 30 (USDA 2005, p. 83).

Federally Listed Species

Mexican Spotted Owl

- The Forest Service will undergo consultation with the U.S. Fish and Wildlife Service when, and if:
 - Vegetation management treatments within MSO habitat exceed 7,644 acres.¹
 - Non-silvicultural treatments are necessary to protect MSO habitat (e.g., chemical control of insect and disease outbreaks).

Protected Habitat

- In the event that a Mexican spotted owl nest site or primary roost area is discovered, and a Protected Activity Center (PAC) is established, the Forest Service will undergo consultation with the U.S. Fish and Wildlife Service prior to any management actions within the designated PAC.

Recovery Nest/Roost Habitat

- Prior to vegetation management treatments in proximity to potential nesting features, perform Mexican spotted owl surveys according to U.S. Fish and Wildlife Service protocols.

- To the extent practicable, defer mechanical and prescribed fire treatments during the breeding season of March 1 through August 31.
- In stands meeting desired nest/roost threshold conditions outlined in Table C.3 of the Revised Recovery Plan (USDI FWS 2012, p. 278), adhere to the following minimum management requirements:
 - Do not treat stands in such a manner as to lower that stand below threshold conditions until ecosystem assessments can document that a surplus of these stands exist at larger landscape levels.
 - Do not remove trees greater than 18 inches dbh unless there are compelling safety reasons to do so, or if it can be demonstrated that tree removal will not be detrimental to owl habitat.
 - Maintain a tree density of 12 trees per acre that are > 18 inches dbh.
 - Maintain a tree basal area of 120 ft²/acre of trees > 1 inch dbh.
 - >30% of the basal area in a size class of 12 to 18 inches dbh.
 - >30 % of the basal area in a size class > 18 inches dbh.
- In stands designated for development of desired nest/roost conditions, adhere to the following management recommendations:
 - Utilize prescriptions that minimize the loss of key habitat components for spotted owl and prey species (e.g., large trees, snags, and logs).
 - Design thinning prescriptions to promote the growth of large trees.
 - Strive for a diversity of patch sizes with a minimum contiguous patch size of 2.5 acres.
 - Strive for species diversity and spatial heterogeneity within patches.
 - Limit the size of created openings in forested stands to 2.5 acres.
 - Maintain a minimum of 60% canopy cover in mixed conifer stands.
 - Maintain ≥ 50% of the stand basal area in a size class of ≥ 16 inches dbh.

Riparian Recovery Habitat

- In stands designated for the maintenance or restoration of riparian recovery habitat, adhere to the following management recommendations:
 - Manage for Proper Functioning Condition (PFC) to attain the highest ecological status and potential natural community structure (i.e., mid- to late-seral conditions) possible within the capability and potential of the site.
 - Manage for a diversity of species, age, and size classes of native riparian trees and shrubs, as well as a diversity of understory herbaceous species.

- Minimize tree and shrub removal. Utilize prescriptions that maintain key habitat components (e.g., hardwoods, and large trees, snags), while encouraging the restoration of PFC and protection against stand-replacing fire.
- Minimize negative impacts of ungulate grazing on riparian vegetation, if needed.
- Avoid construction activities except on a case-specific basis where pressing management needs can be demonstrated.

Recovery Foraging/Non-breeding Habitat

- Emphasize the retention of large trees, logs, and snags at the stand level. Short-term reductions of key habitat components is acceptable, but management should strive to maintain some of these components within the stand.
 - Retain all trees > 24 inches dbh, unless overriding management situations require their removal to protect human safety and/or property (e.g., the removal of hazard trees along roads, in campgrounds, and along power lines), or in situations where leaving large trees precludes reducing threats to owl habitat (e.g., creating a fuel break).
 - Minimize the potential mortality of large trees (i.e., >24 inches dbh) during prescribed fire treatments.
 - Retain most large snags > 18 inches dbh, large downed logs (>18 inches in diameter at any point), and trees (>18 in dbh), unless retention conflicts with forest restoration and/or owl habitat enhancement goals.

Preble's Meadow Jumping Mouse

- Vegetation management treatments within the critical habitat of the Preble's meadow jumping mouse are prohibited.
 - Treatments performed adjacent to Preble's critical habitat must avoid indirect effects to this habitat.
- The suitability of stands modeled as Preble's potential habitat will be assessed by a Forest Service biologist on a project-specific basis. The following standards apply only to the suitable habitat of this species:
 - The entry or crossing of riparian habitat by equipment off of system roads or trails is prohibited.
 - The removal of coniferous trees and the planting of willow within riparian habitat is permitted for the purpose of restoration or enhancement of this habitat.
 - The ignition of prescribed fires in non-forested riparian (e.g., stands composed of grass and shrub) is prohibited, but backing fires are permitted in these areas.
 - The use of ground-disturbing equipment within upland habitat will be confined to the hibernation period of November 1st through May 1st.

Recreation and Visual Resources

- Maintain visual screening and partial retention of vegetation along road and trail corridors to reduce the risk of increased off-road and off-trail use resulting in new non-system routes. Add physical barriers along routes to deter off-road vehicle use.
- Close treatment areas to recreation during implementation for public safety.
- Restrict treatment activities from 6:00 pm on Fridays through 6:00 am on Mondays (6:00 am on Tuesdays when a Monday is a federal holiday) during high recreation season and avoid big game hunting seasons when practical.
- Favor winter logging to reduce resource impacts.
- All temporary roads should be physically closed, obliterated, and completely rehabilitated following treatment to reduce the potential for new social routes being developed.
- Use boulders, berms, fencing, slash, etc. to discourage access if monitoring shows that off-road use is occurring.
- Clear all slash and debris from roads and trails following treatment activities. Restore trail profiles if damaged by machinery.
- Painting in treatment areas should face away from roads and trails.
- Unit, boundary and skid trail flagging should be removed after treatments are completed.

Hydrology

Design criteria to limit disturbance includes compliance with Forest Plan guidance, National and State Best Management Practices, Watershed Conservation Practices criteria, and all other relevant laws, regulations, and policies.

Forest management activities in any wetland, riparian area, and flood plain, will be designed to prevent long and short-term adverse impacts, in accordance with Executive Orders 11988 and 11990, the direction outlined in Forest Service Manual, sections 2526, 2527, and 2633, and in Management Prescription 9A.(Forest Plan)

Watershed Conservation Practices Handbook (FSH 2509.25) provides standards for activities on the Pike National Forest. Colorado State Best Management Practices (BMP's), National Best Management Practices for Water Quality Management on National Forest System Lands, and "Watershed Conservation Practices" (WCP's) are intended to control non-point source pollutants.

The Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Commission has assigned beneficial or protected uses of the surface waters in the UMC Project Area through Regulation No.31 - The Basic Standards and Methodologies for Surface Water (5 CCR 1002-31). Beneficial uses may include recreation, water supply, agriculture, industrial uses, and the protection and propagation of fish and wildlife. These beneficial uses are protected by water quality standards. Waters are classified by the uses for which they are presently suitable or intended to become suitable.

"For all state waters existing classified uses and the level of water quality necessary to protect such uses shall be maintained and protected. No further water quality degradation is allowable which would

interfere with or become injurious to these uses. The classified uses shall be deemed protected if the narrative and numerical standards are not exceeded.”

The Clean Water Act requires all states submit a list of impaired and threatened waters (stream/river segments, lakes) for US Environmental Protection Agency (EPA) approval every two years. CDPHE Water Quality Control Commission publishes the Colorado’s Section 303(d) List of Impaired Waters and Monitoring and Evaluation List (Regulation 93: 5 C.C.R. 1002-93). The regulation identifies all waters where required pollution controls are not sufficient to attain or maintain applicable water quality standards, and establish priorities for development of Total Maximum Daily Loads (TMDLs), monitoring, and evaluation. This is based on the severity of the pollution and the sensitivity of water uses, among other factors. Impairments affect water quality and the US Forest Service must ensure proposed actions and mitigations are consistent with CDPHE anti-degradation rules to limit further water quality degradation.

The Forest Plan requires that: “All activities occurring on the Forest must be mitigated if necessary in order to meet state water quality standards as well as threshold sediment levels.” (USDA Forest Service PSICC Forest Plan)

The most recent Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List is effective 03/01/2016. Lists are updated regularly therefore, actions within the project area or near the project area can affect the current status of listed or unlisted waters. At this time, there are no 2016 303d listings within the project area. BMPs will be used to avoid any potential impacts to water quality including those unlisted in Colorado’s Section 303(d).

Work in the project area should be completed with the overall project objectives and watershed health in mind. Work should be completed in a manner that best limits the disturbance on the landscape. Forest management activities in any wetland, riparian area, and floodplain, will be designed to limit and prevent short and long-term adverse impacts. BMPs will be implemented to minimize the probability of degrading waters within and downstream of the project area. Monitoring will be used to determine if there are adverse effects occurring necessitating a change to project implementation strategies (Forest Service, 2012).

Adaptive management strategies will be used in conjunction with monitoring to achieve desired improvements in watershed condition and health. Watershed health can be measured in the Watershed Condition Classification using indicators described in the Watershed Condition Framework. As the project is implemented, watershed and core indicator conditions will be monitored. Monitoring and reporting will be used as a tool to provide flexibility to account for inaccuracies in initial assumptions, to adapt to changes in environmental conditions, and/or to respond to monitoring information indicating that desired objectives are not being met. If monitoring indicates that management actions are not achieving desired conditions, then changes to the implementation strategy will be taken. All implementation action will be modified using one or more of identified design criteria or BMPs in order to achieve the intended effects.

Treatment Monitoring

A monitoring report was developed as part of the collaborative process (Adaptive Management and Monitoring Recommendations for the UMC landscape, 2016). The report can be found in the appendix. The monitoring report outlines an adaptive management process for evaluating and monitoring results and progress towards desired conditions, metrics for monitoring at both the stand and landscape level, identifies monitoring initiatives for vegetation treatments, fire effects, and watershed condition monitoring. The monitoring recommendations and the Front Range Roundtable Collaborative Forest Landscape Restoration Project: *2017 Ecological, Social and Economic Monitoring Plan* (Barrett, et.al.

2017) was used to draft the following white paper on collaboration and adaptive management for implementing Upper Monument Creek. The forest is committed to continued collaboration through implementation, monitoring, and adaptive management of the landscape. In addition, the forest will implement Best Management Practices Monitoring protocol during and after management, activities occur through contract administration and partnership agreements.

Collaborative and Adaptive Management Implementation and Monitoring Procedure

Adaptive Management Overview

The UMC Proposed Action includes the use of adaptive management principals to enable land managers, along with public and partner participation, to identify management treatments that modify forest structure, pattern, and composition across the landscape to help improve forest resiliency and function in response to the threats from large, high intensity wildfires and the subsequent deleterious effects to watersheds within the Upper Monument Project Area. Experimentation and monitoring are core principles for effective adaptive management and were considered in the analysis. Adaptive management is an approach to natural resource management in which decisions are made as part of an ongoing learning process.

Adaptive management has been incorporated in the UMC in three significant ways:

The first is in the use of an adaptive and iterative planning process allowing for the proposed action to be continually revised up to the point of a final decision based on new information received as part of the public process or from improved site-specific information gathered as part of the ongoing analysis.

Secondly, this FEIS analyzed the effects of fully implementing the range of actions included in the proposed action thus providing a basis for examining differences between predicted and actual outcomes. This approach is grounded on the recognition and acceptance of certain risks and a degree of uncertainty in being able to fully implement all the actions identified as part of the analysis. As a result, the analysis considers a suite of actions appropriate for meeting desired objectives that may be selected from at the point of project design and layout. Consequently, as new projects are identified, resource specialists and public feedback will be used to modify the project to ensure that appropriate design criteria reflective of site-specific conditions (cover type, slopes, wildlife habitats, etc.) are fully considered prior to implementation of each project.

Thirdly, adaptive management relies on continually monitoring changing conditions and the result of actions to determine if outcomes constitute an adequate basis for changing implementation strategies. Given the large scale and topographical complexity of the project area, this continual monitoring allows for addressing the presence of risk and uncertainty, and so provides capacity to recognize and adjust to ecological landscape changes that may become evident as projects are implemented. Effects are monitored both for the purposes of learning and adjusting future management actions, thereby improving the efficiency and responsiveness of management. It is “a system of management practices based on identified intended outcomes and monitoring to determine if management actions are meeting those outcomes; and, if not, to facilitate management changes that will best ensure those outcomes” (40 CFR 220.3). In support of this, partners, stakeholders, and the Forest Service have worked together using the stated goals and objectives in this document to develop specific monitoring questions and plan to implement monitoring strategies throughout the life of the project. The monitoring report was included in Appendix C of the final EIS and subsequent updated versions of the report will be used to guide monitoring protocols and procedures. Monitoring results will help the FS determine whether treatments

are helping the landscape move towards the desired conditions and whether changes in implementation are necessary.

The purpose of this section will focus on further outlining the third element of adaptive management by providing timelines, processes, and a description of the feedback loop used to apply adaptive management and monitoring to the UMC project.

Project Planning, Implementation, and Monitoring Feedback

It is anticipated that the UMC project will be implemented over the course of 10 to 15 years and represents only a portion of the overall vegetation management program on the Pikes Peak Ranger District and Pike National Forest. The UMC project will divide groups of stands/treatment areas into smaller “sub-projects” to be implemented on an annual basis and incorporated into the Pike NF’s 5-year vegetation implementation plan (5yr plan). This may include service contracts, timber sales, firewood units, prescribed burns, or force-account project work. The 5yr plan is formulated based on priority treatments in key watersheds or areas of concern across three districts, taking into account funding sources and the timing of NEPA decisions. Consequently, it is difficult to anticipate the exact sequence of all potential treatments over the course of five years due to the variability in funding levels and availability of contractors to carry out the actions. Treatment sequencing for UMC and identifying each “sub-project” will primarily be based on watershed distribution, wildfire risk, availability of partners to assist with work, and funding. Every attempt will be made to sequence treatments across an entire watershed in order to perform meaningful monitoring at the landscape level. Doing so would help the Forest Service and collaborative partners with complementary monitoring at both the stand and landscape levels.

The 5yr plan and corresponding maps will be distributed to the collaborative and interested parties, in late fall (~Nov. 15th) of each year. Any interested parties not currently affiliated with the collaborative may involve themselves at any time during the life of this project by contacting the Pikes Peak Ranger District. The distribution of the 5yr plan will serve as a notice of intent and will provide an opportunity for collaborators to become familiar with upcoming proposed projects and to further familiarize themselves with treatment areas of interest. Collaborators will provide the Forest Service recommendations or feedback for the upcoming proposed project by February 1st of the following year (3.5 months for review). Also, the 5yr plan will provide an opportunity for collaborators to recommend sites for field visit for the upcoming year that provide an opportunity to discuss upcoming treatments, preferred treatment methods, and stand objectives. The Forest Service will commit to two site visits per year with partners to help keep the lines of communication open. The selection of field visits will be determined by collaborators in partnership with the Forest Service to help identify locations meeting multiple objectives. Ideally site visits would focus on visiting one previously treated site and one site planned for treatment in the near future. The 5yr plan is a fluid document and may be edited or changed as priorities shift, so the latest version will be distributed or posted annually to allow for clear communication.

The Forest Service will take recommendations from interested parties into consideration as prescriptions (or silvicultural objectives for prescribed burns) are being developed. Treatments will be identified and prioritized from the Treatment Alternatives Table (Table 7, UMC EIS) based on the most ecologically appropriate and economically viable choice for meeting the objectives identified in the purpose and need of the project. Stand prescription and design standards will be reviewed by USFS interdisciplinary team members such as wildlife biologists, hydrologists, recreation and visual specialists, etc. If conflicts arise between resource requirements and/or objectives, design modifications (e.g., unit boundaries, exclusions, etc.) would be applied prior to project implementation. Pre-treatment wildlife surveys, cultural surveys, and/or stand exams would be accomplished during this period, with protection measures established as necessary. After initial internal review is completed, prescriptions will be made available for collaborator

review. Due to internal Forest Service contracting deadlines and time needed to allow for field preparations, any recommendations and feedback regarding prescriptions will be provided back to the Forest Service within ten business days following public availability.

As operations begin to implement treatment plans, on-site monitoring would be performed by Forest Service personnel (e.g., sale administrators, foresters, fire/fuels specialists, engineers, biologists, hydrologists, recreation and visual specialists, etc.) to ensure contracts and prescriptions are properly carried out. If management actions trigger the need to comply with project design standards, the corresponding Forest Service specialist will advise to establish appropriate measures for the protection of those resources.

After operations are completed, implementation monitoring would be conducted by Forest Service personnel with the purpose of evaluating the success of treatments in achieving management objectives, and if necessary, identifying changes to future treatment methods to ensure that desired outcomes are met. Implementation monitoring would also serve to ensure that management actions are in compliance with Forest Plan standards and guidelines. Failure to comply would serve as a trigger point for further analysis or a modification of pending treatments.

Each fall, a report displaying completed sub-projects would be distributed along with the 5yr plan and a corresponding map showing future projects. This will allow for monitoring or field review by partners on recently completed treatments. Post-treatment “effectiveness” monitoring would follow procedures outlined in Front Range Roundtable Collaborative Forest Landscape Restoration Project: 2017 Ecological, Social and Economic Monitoring Plan (Monitoring Plan), or the most recent updated version approved by the collaborative group. The Monitoring Plan has been a working, “living” document in draft form and represents a collaborative consensus on how to implement monitoring on the UMC project. The Monitoring Plan is intended to serve as a technical guide for Collaborative partners on measuring meaningful metrics to help direct management decisions and reduce uncertainty under an adaptive management framework. Monitoring of the social impacts of the treatments on recreation and the decommissioning of any user created routes that develop will also be accomplished through the use of Forest Service personnel and volunteers.

Recommendations or feedback resulting from the review of completed treatments and compilation of monitoring results should be provided to the Forest Service by February 1st of the following year for consideration in upcoming projects. This approach will provide partners with an opportunity to recommend how the Forest Service should adapt future treatments in similar vegetation and conditions to achieve superior results. This is the same timeline that will be followed for recommendations and feedback of future projects described earlier in this document. See Table 1 below outlining the Project Planning, Implementation, and Feedback Process. Note the table gives a visual display for the first two fiscal years (FY) of UMC project implementation. This same timeline can be applied to successive years for successive projects within UMC.

Conclusion

This section, or the “white paper”, puts into place timelines and procedures that integrate adaptive management into the project planning and implementation process. Through the establishment of a feedback loop, the FS and collaborators will be able to assess and communicate whether treatments are achieving desired conditions throughout the UMC project area. The combination of USFS and collaborative partner monitoring results will be used to help evaluate the rate and extent of achievement of individual project goals and to incorporate those results into silvicultural treatments and objectives for successive projects. Table 9 below visually outlines the Planning, Implementation, and Feedback process to allow for adaptive management and collaboration throughout the life of the UMC project.

Table 5: Project Planning, Implementation, and Feedback Process for UMC

| Due Date | Responsible Party | | | FY 1 | FY 2 |
|----------------------|---|---|-------------------------------|------|------|
| | FS | Collaborators | Both | TBD | TBD |
| Nov 15 th | Distribute 5-year plan to collaborators | | Choose Site Visit | TBD | TBD |
| Feb 1 st | | Provide feedback to FS on proposed project (FY1) | | | |
| | | Provide feedback to FS regarding monitoring results from project 1 and proposed project 2 (FY2) | | TBD | TBD |
| Spring | Incorporate feedback from collaborators into Rxs | Perform pre-treatment surveys | | TBD | |
| | Distribute Rxs to collaborators | Rx feedback required to the FS within 10 business days | Site Visit 1 and Site Visit 2 | | |
| Summer | Project implementation | | | | |
| | Implementation monitoring | | | | |
| Late-Fall | Provide report on completed projects to collaborators | Treatment Monitoring | | | |
| | | Provide feedback to FS on upcoming proposed project using monitoring results | | | |

Rxs= Silvicultural Prescriptions; FY=Fiscal Year

Treatment Sequencing

Treatment sequencing is primarily based on watershed distribution, wildfire risk, availability of partners to assist with work, and funding. Every attempt will be made to sequence treatments across an entire watershed. Doing so would help the Forest Service and collaborative partners monitor at both the stand and the landscape level.

Alternative Selection

When compared with the no-action and other iterative alternatives considered during project planning, Alternative 2 best meets project purpose and need by restoring more resilient ecological conditions across the entire landscape and particularly Front Range forests; reducing severe wildfire impacts on property, infrastructure, and natural resources; and contributes towards the long-term sustainability of a full range of forest values including creating effective wildlife habitat and protecting aquatic resources. Alternative 2 treats up to 31,700 acres within the 70,600-acre UMC project area (Figure 4). Alternative 2 treatments include a combination of mechanical thinning with product removal, service work, manual thinning, pile burning, post treatment broadcast burning, and first entry prescribed fire. All these treatment methods are being utilized to achieve the desired ecological conditions. Implementation of these management actions is expected to begin in 2017, and extend over a period of 10 years or more.

The decision to implement Alternative 2 is based on careful consideration of all available information in the administrative record including the data collected and analyzed as described in the FEIS, the supporting documentation, and public comments on the Draft Environmental Impact Statement (DEIS).

Rationale for My Decision

My decision is based on the following considerations and rationale:

1. My decision is based on compliance with law, regulation and policy, consultation with cooperating and regulatory agencies, consultation with interested tribes, and review of the project record. I have thoroughly examined relevant scientific information and acknowledge incomplete or unavailable information, scientific uncertainty, and risk (to species such as the Abert's Squirrel, Rocky Mountain Elk, Mexican Spotted Owl, Preble's Meadow Jumping Mouse, and Northern goshawk). I have considered input from stakeholders, groups, and individuals (including opposing views). Comments received in response to the DEIS, along with responses, are included in the FEIS, appendix A, "*Response to Scoping and Draft Environmental Impact Statement Comments*."

2. **Purpose and Need:** My decision provides the greatest attainment of the purpose and need while still being sensitive to other resource concerns within the project area. This decision puts approximately 31,700 acres of treatment on a trajectory toward accomplishing desired conditions thus improving the resiliency and sustainability of the ecosystems.

3. **Design Criteria:** All of the Design Criteria listed in Chapter 2 of the FEIS are recommended by members of the Upper Monument Creek Landscape Restoration Project Interdisciplinary Team. To help minimize impacts from implementing this decision, I decided that all the Design Features listed in Chapter 2 of the FEIS and described in this ROD will be implemented.

4. **No Action Alternative:** I considered the No Action Alternative; however, I chose not to select the No Action Alternative because the Purpose and Need would not be accomplished and the Desired Conditions would not be achieved by implementing the No Action Alternative.

5. **Desired Conditions:** The desired conditions for UMC, as described in the FEIS, are when forest structure is such that the outcomes of fire are ecologically appropriate and socially acceptable, thus posing less of a threat to people and the environment and fostering the sustainability of key forest values. This decision will directly put approximately 31,700 acres on a trajectory toward accomplishing desired conditions thus improving resiliency and sustainability of the ecosystems.

6. **Treatment Options:** For removal treatments, I considered treatment options on mechanically feasible slopes of 0-30 percent in all forest cover types. For non-removal treatments, I considered treatment options on slopes of 30-40 percent where use of mechanical equipment is not likely but possible based on slope breaks. Other treatments considered include broadcast fire, fuel breaks, oakbrush mitigation, bighorn sheep habitat improvement, floodplain improvement, transmission lines/communication sites, transportation system, and the East Rampart Roadless Area. This decision allows me to implement any of the treatment actions listed in Table 4 starting on page 19 based on conditions determined on the ground during project layout. The options I select are limited by slope and vegetation type as described in the Table 4

7. **Treatment of Identified Project Issues:** Based on the analysis completed for **Issue 1** (Project activities may result in adverse impacts to forest, recreation, and riparian resources, *Hydrology Specialist Report (Lessard 2016)*), the effects from implementing proposed action will improve watershed functionality and stabilize hillslope and soils through road, trail, and culvert improvements.

Based on the analysis completed for **Issue 2** (Prescribed fire activities may impact adjacent private property, *Fire and Fuels Specialist Report (Zanotto 2016)*), once fully treated, the proposed action would reduce the potential for active crown fire and allow the use of prescribed fire in areas that previously had higher fuel loads. Prescribed fire would be localized and contribute short term effects to local communities. The no action alternative presents a higher risk of loss to adjacent communities.

Based on the analysis completed for **Issue 3** (Project activities may result in wildlife being displaced, *Specialist Report for Wildlife and Fisheries Resources (Quesada 2016)*), effects of treatments on wildlife were considered. Treatments will improve habitat for a variety of species, and project implementation will follow the design criteria in Chapter 2 of the EIS to avoid or minimize impacts to wildlife.

8. Temporary Roads: I considered impacts from temporary roads. I decided that all existing roads should be used to the extent possible for treatment. I also decided that a minimal amount temporary road will be constructed as necessary to implement the UMC landscape restoration project. Upon project completion, the temporary roads will be obliterated. Reclaiming efforts will adhere to standard engineering best management practices and will be accomplished by ripping the roadbed and/or scarifying (scratching) the road surface with mechanical equipment. Litter and debris that is available in the area (primarily slash and large rocks) will be scattered over the ripped or scarified road surface and placed at or near the temporary road origins in order to deter traffic.

To help minimize impacts from temporary roads, I decided the following actions will also be implemented:

- No temporary roads will be constructed inside East Rampart Roadless area.

In addition, Forest Service Handbook (FSH) 7709.55 Travel Planning Handbook directs that a Travel Analysis Process (TAP) be completed for projects to inform the deciding official of travel management issues. This decision does not make any changes to the current Pike National Forest Motorized Travel Plan; therefore, a TAP is not necessary to perform.

9. Rampart East Roadless area: I considered impacts to the Rampart East Roadless Area. Palmer Lake is listed as an at-risk-community in the Federal Register and the treatments meet the exception criteria of being located within the first one-half mile of the CPZ, or within the next one-mile of the CPZ AND is within an area identified in a CWPP (36 CFR 294.42(c)(1)). The Palmer Lake CWPP focuses on cutting and removing generally small diameter trees to create fuel conditions that modify fire behavior while retaining large trees to the maximum extent practical as appropriate to the forest type. No road construction within the CRAs is required for the project.

10. R2 Sensitive Species: I considered impacts to Region 2 sensitive species. Sensitive species are those plant and animal species identified by a regional forester for which population viability is a concern. Federal law and direction applicable to Forest Service sensitive species are included in the National Forest Management Act and the Forest Service Manual (2670).

I have reviewed the *Upper Monument Creek Landscape Restoration: Specialist Report for Wildlife and Fisheries Resources*. This report includes a Biological Assessment/Evaluation that identifies and evaluates the effects of the management actions proposed under Alternative 2 on species designated as sensitive by the Regional Forester of the USDA Rocky Mountain Region. These species include the Rocky Mountain bighorn sheep, bald eagle, northern leopard frog, western bumble bee, fringed myotis, hoary bat, Townsend's big-eared bat, olive-sided flycatcher, flammulated owl, northern goshawk, and peregrine falcon. These species may be indirectly affected through the manipulation of potential habitat and by the noise disturbance generated during implementation. However, with the application of project

design criteria, these effects would be minimized. The vegetation management proposed under this alternative would also promote the development of desirable habitat conditions for these species. Therefore, *Alternative 2 may adversely impact individuals, but is not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing of these sensitive species.* My decision includes the Design Criteria listed in Chapter 2 of the FEIS and described in this ROD that will avoid or minimize the potential effects of management actions on sensitive species.

11. Management Indicator Species: I considered impacts to Management Indicator Species (MIS). Management indicator species are addressed in order to implement National Forest Management Act (NFMA) regulations. MIS are selected for analysis because their population changes are believed to indicate the effects of management activities, providing insight into the effects of forest management on plant and animal communities. The MIS analyzed for a project are selected based upon their associations with the habitat present in the project area and their suitability as indicators of habitat changes brought about by the proposed alternatives.

I have reviewed the *Upper Monument Creek Landscape Restoration: Specialist Report for Wildlife and Fisheries Resources*. This report includes an analysis of effects of the management actions proposed under Alternative 2 on the Abert's squirrel and Rocky Mountain elk. This report also includes a habitat capability analysis that compares existing habitat conditions with the optimum potential habitat for each MIS. Under Alternative 2, individual Abert's squirrels and elk would be displaced or otherwise disturbed during treatments. However, suitable cover and foraging habitat would be retained or improved for these species. This alternative would also support a minimum viable population of Abert's squirrel and Rocky Mountain elk. Impacts to MIS are disclosed in the Specialist Report and Chapter 3 of the FEIS.

12. Species Federally Listed as Threatened: I considered impacts to species federally listed as threatened or endangered, as determined by the USDI, Fish and Wildlife Service. Species in this category are protected under the Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 *et seq.*

I have reviewed the *Upper Monument Creek Landscape Restoration: Specialist Report for Wildlife and Fisheries Resources*. This report includes a Biological Assessment/Evaluation that identifies and evaluates the effects of the management actions proposed under Alternative 2 on species federally listed, or proposed to be listed, as threatened or endangered. These species include the federally threatened Mexican spotted owl and Preble's meadow jumping mouse. Under Alternative 2, individual spotted owl and Preble's meadow jumping mouse may be indirectly affected through the manipulation of potential upland habitat and by the noise disturbance generated during implementation. However, with the application of project design criteria, the proposed vegetation management is not expected to degrade habitat conditions or result in the direct injury, mortality, or permanent displacement of individuals of these species. In addition, the proposed treatments would move stands toward developing more desirable conditions for the spotted owl. Therefore, *Alternative 2 may affect, but is not likely to adversely affect the Mexican spotted owl, the Preble's Meadow jumping mouse, or the critical habitat of these species.* My decision includes the Design Criteria listed in Chapter 2 of the FEIS and described in this ROD that will avoid or minimize the potential effects of management actions on these species. Impacts to federally listed species are disclosed in the specialist report and Chapter 3 of the FEIS.

13. Recreation: I considered impacts to recreation and visual resources. I reviewed the *UMC Recreation and Visual Resources Specialist Reports* (Miller 2016, Gustafson 2016) that were completed for this project. Based on the Recreation Specialist Report, mechanical and prescribed fire treatments will not permanently lower recreation opportunities in the project area; however, they could temporarily disrupt them during project implementation. Although some roads and dispersed camping areas may be temporarily closed during prescribed fire and/or mechanical treatment implementation, these closures will be to provide for firefighter and public safety and won't be permanent or long term. The temporary

closures will be determined by implementation personnel and will be based on the hazards present at the time of implementation. The design criteria listed in the decision above will minimize impacts to recreation opportunities and visual resources.

14. Climate Change: I considered impacts to and from climate change. This project will likely have little impact on carbon released into the atmosphere. As prescribed fire is implemented, GHG emissions will occur; however, these GHG emissions will be minor in terms of overall global GHG emissions. It is unknown when, how many acres, and/or where wildfires will occur in the future. What can be stated is that because of the uncertainty of these things, the amount of GHG emissions can be better controlled under this decision by controlling the when, where and how prescribed fires will be implemented. The “when, where and how” is described in the FEIS and has to also be approved at the Burn Plan stage. Additionally, this decision will emit less carbon due to mechanical treatments removing additional fuel which will not be burned from prescribed fires. All USFS burn plans require Colorado Department of Health and Environment permitting and approval.

As described in the cumulative effects, in the short term there will be air quality impacts during implementation of this decision; however, National Ambient Air Quality Standards will not be exceeded. In the long term, there will be less fuel and a lower emission potential once an area has received a prescribed burn. Fire is an integral part of ecosystem management and creating safer environments for firefighters to work in. Compared to the no action alternative, this decision is more likely to result in acceptable outcomes for air quality due to the burn bosses’ abilities to mitigate and limit smoke and emissions through professional use of burn plans.

Findings Required by Other Laws

1. National Forest Management Act, Purpose & Need, and 1984 Land and Resource Management Plan (LRMP) Consistency: My decision provides the greatest attainment of the purpose and need while still being sensitive to other resource concerns within the project area. I also took into account the competing interests and values of the public. I considered the LRMP for the project area. My decision responds to the goals and objectives outlined in the LRMP. The desired conditions and purpose and need described in the FEIS for this project are consistent with the Forest’s long-term goals and objective. My decision is in compliance with the general direction and standards and guidelines listed in the LRMP. The District determined a LRMP amendment is not required as part of this project. This review, along with supporting rationale is found in the project record.

2. National Environmental Policy Act: The National Environmental Policy Act requires Federal agencies to consider and disclose the effects of proposed actions that significantly affect the quality of the human environment. The Upper Monument Creek Landscape Restoration Project FEIS analyzes the alternatives and displays the effects in conformance with the Act (40 CFR 1500 to 1508 and FSH 1909.15).

3. Endangered Species Act: I considered impacts to species federally listed as threatened or endangered. I reviewed the Biological Evaluation/Assessment that was completed for aquatic, wildlife, and plant species. Based on the Biological Evaluation/Assessment, this decision is compliant with the legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 9c). This decision will not adversely affect any Threatened, Endangered, or Proposed species or habitat that has been determined to be critical under the Endangered Species Act of 1973.

4. Clean Air Act: I considered impacts to air quality and the Clean Air Act. As described in the Fire and Cumulative Effects sections, in the short term there will be minimal air quality impacts during implementation of this decision; however, National Ambient Air Quality Standards will not be exceeded. In the long term, there will be less fuel and a lower emission potential once an area has received a prescribed burn. Fire is an integral part of ecosystem management and creating safer environments for firefighters to work in. Compared to the no action alternative, my decision is more likely to result in acceptable outcomes for air quality. The proposed project is located in western El Paso County, Colorado and eastern Teller County, Colorado, approximately 11 miles northwest of the city of Colorado Springs. The closest Class I Area is Eagles Nest Wilderness in Summit and Healy Counties on the White River National Forest, 70+ miles northwest of the proposed project (see <https://www.epa.gov/visibility/list-156-mandatory-class-i-federal-areas> for all Class I Areas in Colorado). Per EPA's Green Book (<https://www.epa.gov/green-book>), the nearest nonattainment area is the Denver Metropolitan Area, which is nonattainment for ozone. All ambient monitors (<https://www.epa.gov/outdoor-air-quality-data/monitor-values-report>) near the proposed projects are measuring values in attainment of the National Ambient Air Quality Standards (<https://www.epa.gov/criteria-air-pollutants/naaqs-table>).

5. Clean Water Act: I considered impacts to water quality and the Clean Water Act. I reviewed the *UMC Project Hydrology/Soils Specialist Report* (Lessard 2016) that was completed for this project. Public Law 92-500, as amended in 1977 (Public Law 95-217) and 1987 (Public Law 100-4) also known as the Federal Clean Water Act provides the structure for regulating pollutant discharges to waters of the United States. This decision will not require any Army Corp Discharge, Dredge and Fill Permits since no wetlands will be treated or affected by this decision.

There are no 303d listings within the project area but to help minimize impacts to hydrology throughout the project area, my decision includes several design features on page 32.

More frequent and generally less severe wildfires historically occurred within the assessment area. This decision will introduce this type of fire process into the project area with some control. Implementation of this project is expected to indirectly restore watersheds to function and limit impacts on hydrological values into the future. Based on the Hydrology/Soils Specialist Report, implementation of this decision is consistent with the Clean Water Act.

6. Floodplains and Executive Order 11988: I considered impacts to floodplains and Executive Order 11988. This executive order entitled *Floodplain Management* requires the Forest Service to provide leadership and to take action to (1) minimize adverse impacts associated with occupancy and modification of floodplains and reduce risks of flood loss, (2) minimize impacts of floods on human safety, health, and welfare, and (3) restore and preserve the natural and beneficial values served by flood plains. In compliance with this order, the Forest Service requires an analysis be completed to determine the significance of proposed actions in terms of impacts to flood plains.

9. Wetlands and Executive Order 11990: I considered impacts to wetlands and Executive Order 11990. This order entitled *Protection of Wetlands* requires the Forest Service to take action to minimize destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

I reviewed the *UMC Project Hydrology/Soils Specialist Report* (Lessard 2016) that was completed for this project. Wetlands are not targeted for mechanical and prescribed fire treatments. More frequent and generally less severe wildfires historically occurred within the assessment area. This decision will introduce this type of fire process into the project area with some control. Implementation of this project is expected to indirectly restore watersheds to function and limit impacts on hydrological values into the future. This decision includes several design features on page 32 to help minimize impacts to riparian

areas. The Hydrology/Soils Specialist Report determined that implementation of the action alternatives and this decision is in compliance with Executive Order 11990.

10. National Historic Preservation Act: I considered impacts to cultural/heritage resources and the National Historic Preservation Act. The National Historic Preservation Act and the NEPA both require that considerations be given to the potential effects of Federal undertakings on historic resources (including historic and prehistoric cultural resource sites). After review of the action alternatives, the Pike District Archaeologist drafted a programmatic agreement with associated design criteria to survey and consult with the State Historic Preservation Officer if any new cultural/heritage resources are identified. The Pike District Archaeologist is still working on programmatic agreement finalization. Project implementation will not occur until the Pike National Forest receives a signed project specific programmatic agreement from the Colorado SHPO

11. Environmental Justice and Executive Order 12898: I considered impacts to Executive Order 12898; Environmental Justice. Executive Order 12898 entitled *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations* requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. This decision is in compliance with Executive Order 12898 because based on public comments there is no indication that this project would adversely or disproportionately affect American Indians, other racial minorities, or low-income groups.

12. Collaborative Forest Landscape Restoration Act: I considered the Collaborative Forest Landscape Restoration Act. Chapter 1 in the FEIS describes the collaboration that has occurred for this project. Based on all the collaboration that has occurred for this project, this decision is consistent with the Collaborative Forest Landscape Restoration Act.

Public Involvement

The proposed action was listed on the Forest's schedule of proposed action website on April 1, 2014 and a notice of intent to prepare an EIS was published in the Federal Register on May 22, 2014. The Forest website was periodically updated during the environmental analysis. The proposal was provided to the public and other agencies for comment during the scoping from May 22 to July 7, 2014. Additionally, three public meetings were conducted as part of the public involvement process.

Using the comments from the public, other agencies, and organizations, the interdisciplinary team identified several issues regarding the effects of the proposed action. The following significant issues were identified and used to determine the scope of the analysis and create the alternatives described above:

- Project activities may result in adverse impacts to forest, recreation, and riparian resources
- Prescribed fire activities may impact adjacent private property
- Project activities may result in wildlife being displaced

The treatment of issues section on page 38 describes how the analysis considered issues submitted during all comment periods that the USFS identified as germane.

The DEIS was posted on the Forest's website and the notice of availability (NOA) was published in the Federal Register on November 4, 2016 (FR Doc. 2016–26734). The NOA asked for public comment on

the DEIS for 45 days. The District received comments from 13 entities including individuals, local government, state government, federal and state agencies, and organizations. One virtual meeting and two public meetings were conducted in December of 2016

A full description of scoping and DEIS comments and response can be found in Appendix A of the FEIS.

Tribal Consultation

The Pike Forest Archaeologist contacted the following Native American Tribes:

- Cheyenne and Arapaho Tribes of Oklahoma
- Comanche Nation of Oklahoma
- Jicarilla Apache Nation
- Kiowa Tribe of Oklahoma
- Northern Cheyenne Tribe
- Southern Ute Tribe
- Ute Mountain Tribe (Unitah and Ouray Reservation)
- Ute Mountain Ute Tribe

The Northern Cheyenne Tribe requested additional response time. The Pike National Forest Archaeologist followed-up with them on but had not received an answer as of April 20, 2017.

Alternatives Not Carried Forward for Detailed Analysis

The methodology used to develop the proposed action scoped in 2014 was analyzed by the interdisciplinary team. A detailed analysis was not conducted on the original polygons because many of them were carried forward through the public comment and collaboration process. Those portions of the proposed action not carried forward for detailed analysis are discussed in Chapter 1, Changes to the Proposed Action. The modified proposed action results from several iterations (alternatives). Given the adaptive nature of the planning effort, NEPA decision, and implementation of the proposed action; the EIS considers the broadest range of affects and actions possible for the UMC project area. Because the final layout and treatments of the polygons identified in the proposed alternative will ultimately have to be determined by the site-specific feasibility of implementing the analyzed actions for each polygon, the EIS focused on identifying all acres suitable for potential treatment given known limitations imposed by slopes, geology, access, and effectiveness of proposed treatments and carried those acres forward for detailed analysis.

Three Forest Plan Amendments were evaluated and eliminated from detailed study.

Wildlife amendment for Elk hiding cover. It was determined this project would meet the intent of the wildlife hiding cover described in the Forest Plan.

Allowing fire to burn on the landscape. Letting fire burn on the landscape is a function of time or year, location, and whether treatments have occurred to provide safe anchor points.

Timber openings: Currently a maximum size of 40-acre openings can be created and maintained in all management areas other than timber management areas 7A and 7D, with the exception of aspen enhancement in those timber management areas. NFMA standards require certification or replanting within five years in suitable timber management areas 7A and 7D. The amendment would require

changing the management area and timber suitability. The project team determined through analysis project desired conditions for timber openings could be met without amending the Forest Plan.

The proposed plan amendments specific to this project could impose direction on ongoing or future project analyses. Therefore, it was determined that these amendments have a greater implication beyond the current project and these management considerations should be reevaluated during the Forest Plan revision process. The Pike and San Isabel National Forest is scheduled to begin revising the Forest Plan in the next few years. In addition, project implementation without any plan amendment would still meet the purpose and need and bring the landscape closer to the desired conditions.

Alternatives Considered in Detail

In addition to the selected alternative, I considered the No Action alternative, which is discussed below. Alternative 2 was the environmentally preferred alternative. A more detailed comparison of these alternatives can be found in the EIS on pages 38-74.

Alternative 1 – No Action

Under the no-action alternative, current management plans would continue to guide management of the project area. Under this alternative, vegetation management actions would not be employed on the UMC landscape. The departure of ecological conditions from a natural range of variability would persist. The vegetative conditions within the UMC landscape would continue to differ, in both structure and distribution, from historic forest conditions. The project area would also remain at risk from large-scale, high-intensity wildfire due to an altered fuel load and structure resulting from increases in tree density, encroachment of shade tolerant tree species, or loss of shade intolerant tree species.

Alternative 2

The FEIS displays the effects of Alternative 2

The intent of the proposed action is to restore more resilient ecological conditions across the entire landscape and particularly Front Range forests; reduce the impacts of severe wildfires on property, infrastructure, and natural resources; and contribute towards the long-term sustainability of a full range of forest values including creating effective wildlife habitat and protecting aquatic resources. Alternative 2 fully supports the proposed action by treating up to 31,700 acres within the 70,600-acre UMC project area. The treatments are a combination of mechanical thinning with product removal, service work, manual thinning, pile burning, post treatment broadcast burning, and first entry prescribed fire that would the proposed actions desired ecological conditions. Implementation of these management actions is expected to begin in 2017, and extend over a period of 10 years or more.

Best Available Science

The conclusions disclosed in the FEIS and summarized in this document are based on a review of the project's record that reflects consideration of relevant scientific information. My conclusion is based on a review of the project record that shows my staff conducted a thorough review of relevant scientific information, considered responsible opposing views, and acknowledged incomplete or unavailable information, scientific uncertainty, and risk. Please refer to the specialist reports in the project file for specific discussions of the science and methods used for analysis and for literature reviewed and referenced.

Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) regulations for implementing the NEPA require that the Record of Decision specify “the alternative or alternatives which were considered to be environmentally preferable” (40 C.F.R. §1505.2(b)). The CEQ has interpreted the environmentally preferred alternative to be “the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ’s Forty Most-Asked Questions, 46 Federal Register, 18026, March 23, 1981).

From the perspective of causing the least amount of change to the natural environment, Alternative 1 is the environmentally preferable alternative. However, I believe that the selected alternative, Alternative 2 as modified, minimizes environmental harm from action due to the number of Design Criteria/Mitigation Measures required to avoid and minimize environmental harm. All practical means to avoid or minimize environmental harm from the alternative selected have been adopted with this decision (i.e., select for the retention of live trees containing desirable characteristics for wildlife when available and compatible with resource objectives, and no temporary roads will be constructed in the East Rampart Roadless Area).

Conclusion

My decision provides the greatest attainment of the purpose and need and moving toward desired conditions while also still being sensitive to other resource concerns within the project area. This decision puts approximately 31,700 acres of treatment on a trajectory toward accomplishing desired conditions thus improving the resiliency and sustainability of the ecosystems. This decision establishes an extensive monitoring plan and commits the US Forest Service to continued collaboration through implementation and monitoring. This decision also increases the probability that future naturally caused fires can be managed (if possible, not suppressed) and allowed to play the greatest feasible natural role in the Upper Monument Creek area.

Implementation Date

If no objections are filed within the 45-day time period, the signing of the Record of Decision in accordance with 40 CRF 1506.10, may occur on, but not before, the 5th business day following the end of the objection filing period. If no objections are received, the responsible official may sign the Final Record of Decision and implement the project without further legal notice of the decision. Interested and affected parties will be informed of the decision. If an objection occurs, a decision can be signed as soon as a written objection response is made.

Administrative Review or Objection Opportunities

This draft decision is subject to objection pursuant to 36 CFR 218, Subparts A and B. Objections will be accepted from those who have previously submitted specific written comments regarding the proposed project during scoping or other designated opportunity for public comment in accordance with §218.5(a). Issues raised in objections must be based on previously submitted timely, specific written comments regarding the proposed project unless based on new information arising after the designated comment opportunities.

Individual members of organizations must have submitted their own comments to meet the requirements of eligibility as an individual, objections received on behalf of an organization are considered as those of the organization only. If an objection is submitted on behalf of a number of individuals or organizations, each individual or organization listed must meet the eligibility requirement of having previously submitted comments on the project (§ 218.7). Names and addresses of objectors will become part of the public record.

Contents of an Objection: Incorporation of documents by reference in the objection is permitted only as provided for at § 218.8(b). Minimum content requirements of an objection are identified in § 218.8(d) include:

- Objector's name and address with a telephone number if available; with signature or other verification of authorship supplied upon request;
- Identification of the lead objector when multiple names are listed, along with verification upon request;
- Name of project, name and title of the responsible official, national forest/ranger district of project, and
- Sufficient narrative description of those aspects of the proposed project objected to, specific issues related to the project, how environmental law, regulation, or policy would be violated, and suggested remedies which would resolve the objection.
- Statement demonstrating the connection between prior specific written comments on this project and the content of the objection, unless the objection issue arose after the designated opportunity (ies) for comment.

Filing an Objection:

Objections, including attachments, must be filed via mail, express delivery, messenger service or fax to:

Objection Reviewing Officer
USDA Forest Service
Rocky Mountain Region
740 Simms Street
Golden, CO 80401
Fax:303-275-5134

Office hours for those submitting hand-delivered objections are: 7:30 AM to 4:00 PM, Monday through Friday, excluding holidays at the address above. E-mail objections must be submitted to r02admin_review@fs.fed.us with "Upper Monument Creek Project" typed in the subject line. Electronic objections must be submitted in MS Word (.doc or .docx), rich text format (.rtf), portable document format (.pdf) or other format that can be read with optical character recognition software. It is the responsibility of Objectors to ensure their objection is received in a timely manner (36 CFR 218.9).

The publication date of the Legal Notice in the Colorado Springs Gazette, newspaper of record, is the exclusive means for calculating the time to file an objection of this project. Those wishing to object to this proposed project should not rely upon dates or timeframe information provided by any other source.

Contact Person

For additional information concerning this decision or the Forest Service pre-decisional appeal process, contact John Dow, PSICC, 2840 Kachina Drive, Pueblo, CO 81008. 719-553-1476.

OSCAR MARTINEZ]
Pikes Peak District Ranger

DATE

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